

December 50c

1957

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CQ

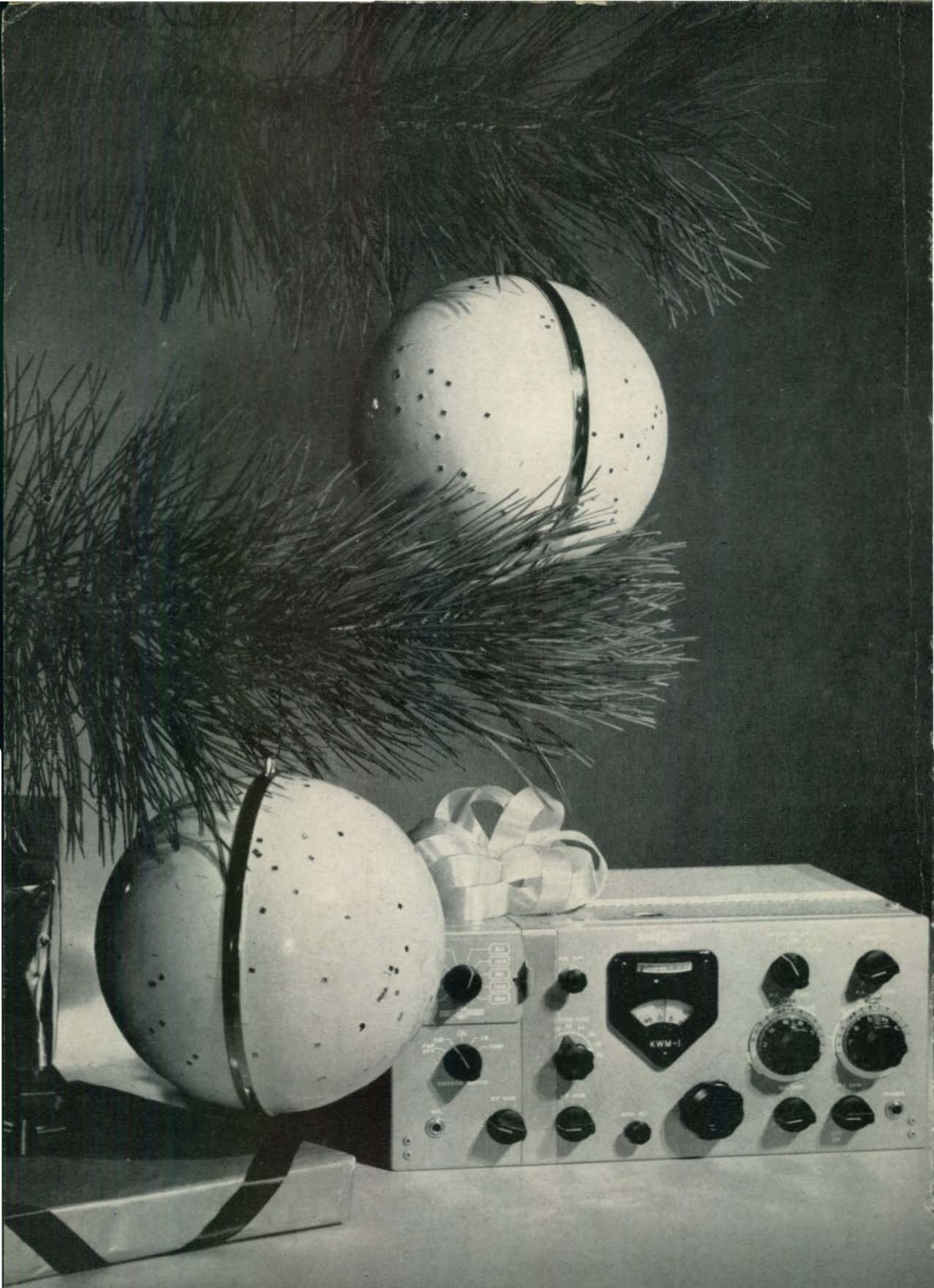
wins CQ's

First WPX

award



The Radio Amateur's Journal



first on every Amateur's list*

*even if he already has the 75A-4 and KWS-1

HAPPY HOLIDAY

BILL PETERSEN, WØJRY



PETERSEN RADIO COMPANY, Inc.

2800 WEST BROADWAY, COUNCIL BLUFFS, IOWA

For further information, check number 1 on page 124.

← For further information, check number 23 on page 124.

December, 1957 • CQ • 1

BUD "Mighty-Mite"

NEW! LOW COST!

C.P.O. and MONITOR



Look at these outstanding features:

- Small size—only 1½" x 2¼" x 4¼"
- Completely transistorized
- Can be converted from Oscillator to Monitor without any internal changes by user.
- Sturdy aluminum case with grey hammertone finish.

Here is the first low cost, combination Code Practice Oscillator and Monitor. It's small, lightweight and operates entirely on transistors not on tubes. Works indoors or outdoors since it requires no separate power supply. Uses pen-light batteries. Earphone model only. Not a gadget... its performance will compare favorably with higher priced earphone models. Ideal for novices, Cub Scouts, Boy Scouts and other. Full instructions for operating and converting from C.P.O. to Monitor furnished.

Catalog No.
C.P.O. 155-T

Amateur Net \$5.88
(less batteries)

See and try the new BUD "Mighty-Mite" at your distributor's showroom now or write for literature.



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Cleveland 3, Ohio
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CQ, the Radio Amateurs' Journal is published for active hams by active hams. Not affiliated with any clubs or other political groups, CQ endeavors to be a true and honest reporter for those interested in the hobby. Suggestions for improvement are welcomed. Our address is:

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300 West 43rd Street
New York 36, N. Y.

Authors would do well to send for the CQ Style sheet which will explain our confused system of abbreviations and symbols. The article "Author Author" (October 1952 CQ) tells all about how to write articles for CQ, how much we pay, etc. Reprints of this article are available from CQ if you have been improvident in keeping up your radio library.

CQ Certificates:

The WPX Award is granted for two-way contact with certain number of amateurs in different prefixes of the world. Full details are contained in the WPX Record Book which is available for 15c from CQ. Application forms are free.

The WAZ Award is granted for contacting all of the amateur zones of the world. Current standings of amateurs working for this award will be found in the DX column. A DX Zone map of the world is available free from CQ. Send stamped envelope.

Technical Information:

Please check the 11-year cumulative index which was published in the January 1956 CQ for information about articles in past issues of CQ. The December 1956 CQ yearly index will bring you up to 1957. Most back issues are available at 50c each from us, check our "Back Issue" ad for details on those not available. Reprints of the Cumulative Index are available free.

Disclaimer:

The authors and editors do the best they can to make everything as correct as possible in the articles. If for any reason any of them should happen to goof we hasten to point out that everything is experimental and we guarantee nothing.

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in kit form . . .
designed especially to
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HEATHKIT

DX-100

**TRANSMITTER
KIT**

**PHONE
AND CW**

- ▶ Phone or CW—160 through 10 meters.
- ▶ 100 watts RF on phone—120 watts CW—parallel 6146 final.
- ▶ Built-in VFO—pi network output circuit.
- ▶ Easy to build—TVI suppressed



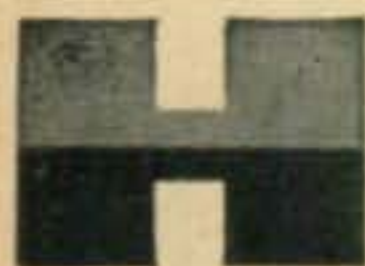
MODEL DX-100

\$189⁵⁰

\$18.95 dwn., \$15.92 mo.
Shpg. Wt. 107 Lbs.

Shipped motor freight unless
otherwise specified.
\$50.00 deposit required
on c.o.d. orders.

The Heathkit DX-100 phone-CW transmitter offers features far beyond those normally received at this price level. It has a built-in VFO, built-in modulator, and built-in power supplies. It is TVI suppressed, and uses pi network interstage coupling and output coupling. Matches antenna impedances from approximately 50 to 600 ohms. Provides a clean strong signal on either phone or CW, with RF output in excess of 100 watts on phone, and 120 watts on CW. Completely bandswitching from 160 through 10 meters. A pair of 1625 tubes are used in push-pull for the modulator, and the final consists of a pair of 6146 tubes in parallel. VFO dial and meter face are illuminated. High-quality components throughout! The DX-100 is very easy to build, even for a beginner, and is a proven, trouble-free rig that will insure many hours of enjoyment in your ham shack.



HEATH COMPANY BENTON HARBOR 12, MICHIGAN

A Subsidiary of Daystrom, Inc.

For further information, check number 3 on page 124.

HEATHKIT **DX-35** TRANSMITTER KIT

PHONE AND CW

This transmitter features a 6146 final amplifier to provide 65 watt plate power input on CW, with controlled-carrier modulation peaks up to 50 watts on phone. Modulator and power supplies are built in, and the rig covers 80, 40, 20, 15, 11 and 10 meters with a single band-change switch. Pi network output coupling provides for matching various antenna impedances. Employs 12BY7 oscillator, 12BY7 buffer and 6146 final. Speech amplifier is a 12AX7, and a 12AU7 is employed as modulator. Panel control provides switch selection of three different crystals, reached through access door at rear. Panel meter indicates final grid current or final plate current. A perfect low-power transmitter both for the novice or the more experienced amateur. A remarkable power package for the price. The price includes tubes, and all other parts necessary for construction. Comprehensive instruction manual insures successful assembly.



MODEL DX-35

\$56⁹⁵

Shpg. Wt.
24 Lbs.

\$5.70 dwn., \$4.78 mo.

- ▶ Phone or CW—80 through 10 meters.
- ▶ 65 watts CW—50 watts peak on phone—6146 final amplifier.
- ▶ Pi network output to match various antenna impedances.
- ▶ Tremendous dollar value—easy to build.

BRAND NEW

HEATHKIT **DX-20** CW TRANSMITTER KIT



MODEL DX-20

\$35⁹⁵

\$3.60 dwn., \$3.02 mo.

Shpg. Wt. 18 Lbs.

- ▶ Designed exclusively for CW work.
- ▶ 50 watts plate power input—80 through 10 meters.
- ▶ Pi network output circuit to match various antenna impedances.
- ▶ Attractive and functional styling—easy to build.

Here is a straight-CW transmitter that is one of the most efficient rigs available today. It is ideal for the novice, and even for the advanced-class CW operator. This 50 watt transmitter employs a 6DQ6A final amplifier, a 6CL6 oscillator, a 5U4GB rectifier and features one-knob bandswitching to cover 80, 40, 20, 15, 11 and 10 meters. It is designed for crystal excitation, but may be excited by an external VFO. A pi network output circuit is employed to match antenna impedances between 50 and 1000 ohms. Employs top-quality parts throughout, including "potted" transformers, etc. If you appreciate a good signal on the CW bands, this is the transmitter for you!



HEATH COMPANY BENTON HARBOR 12, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT

COMMUNICATIONS-TYPE, ALL BAND

RECEIVER KIT



This receiver covers 550 kc to 30 mc in four bands, and is ideal for the short wave listener or beginning amateur. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer-type power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—headphone jack—and AGC. Has built-in BFO for CW reception.

MODEL AR-3

\$29⁹⁵

incl. excise tax
(less cabinet)

\$3.00 dwn., \$2.52 mo.

Shpg. Wt. 12 Lbs.

CABINET: Fabric covered cabinet with aluminum panel as shown. Part 91-15A. Shipping Wt. 5 Lbs. \$1.50 dwn., \$1.42 mo.

\$4.95

A HEATHKIT VFO KIT MODEL VF-1

Covers 160, 80, 40, 20, 15, 11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 VDC at 15 to 20 ma, and 6.3 VAC at 0.45A. Incorporates regulator tube for stability and illuminated frequency dial. Shpg. wt. 7 lbs. \$1.95 dwn., \$1.64 mo. **\$19.50**

B HEATHKIT GRID DIP METER KIT MODEL GD-1B

Continuous coverage from 2 mc to 250 mc with prewound coils. 500 ua panel meter for indication. Use to locate parasitics, for neutralizing, determining resonant frequencies, etc. Will double as absorption-type wavemeter. Shpg. wt. 4 lbs. \$2.00 dwn., \$1.68 mo. **\$19.95**

C HEATHKIT ANTENNA IMPEDANCE METER KIT MODEL AM-1

The AM-1 covers 0 to 600 ohms for RF tests. Functions up to 150 mc. Used in conjunction with a signal source, will determine antenna resistance and resonance, match transmission lines for minimum SWR, determine input impedance, etc. Shpg. wt. 2 lbs. \$1.45 dwn., \$1.22 mo. **\$14.50**

D HEATHKIT "Q" MULTIPLIER KIT MODEL QF-1

Functions with any receiver having IF frequency between 450 and 460 kc that is not AC DC type. Operates from receiver power supply, requiring only 6.3 volts AC at 300 ma (or 12.6 vac at 150 ma), and 150 to 250 vdc at 2 ma. Simple to connect with cable and plugs supplied. Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of approximately 4000. Shpg. wt. 3 lbs. \$1.00 dwn., \$.84 mo. **\$9.95**



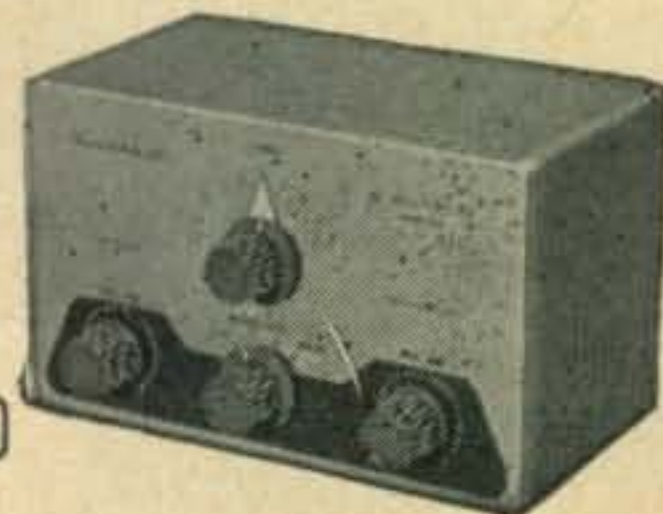
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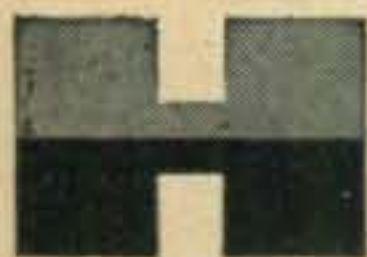
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D

HOW TO ORDER...

It's simple—just identify the kit you desire by its model number and send your order to the address listed below. Or, if you would rather budget your purchase, send for details of the Heath Time Payment Plan for orders totaling \$90.00 or more.



HEATH COMPANY BENTON HARBOR 12, MICHIGAN

A Subsidiary of Daystrom, Inc.

For further information, check number 5 on page 124.

. . . de W2NSD

NEVER SAY DIE

Ham Register

My copy finally came the other day . . . what a book! I sure wish I'd thought of putting out that one. I sat down to take a quick look in it and was torn loose for dinner three hours later. It grabbed hold of me. This book could have a profound effect on ham radio contacts.

Being a well-hobbled sort, I naturally spent most of my time in looking up the hobbies listed under each biography. With red pencil in hand I marked those interested in sports cars, skin diving, horsemanship, flying, and other things of particular interest to me. As more and more of the fellows sprouted red marks I got to thinking that perhaps we should help get groups together through CQ.

Like we might have an all-ham sports car rally some weekend. I'll bet that W1FZJ and W2HDM (our new Surplus Editor) would tool their new red MGA's to such a rally, and I'd have a chance to show off my new 1958 Porsche 1600 Speedster. Drop me a postcard.

Or we might have an all-ham fly-in party at some airport, preferably with water nearby for the seaplane set, like me. New London has a good place for this. What say?

Airborne

Speaking of planes, reminds me of the miseries I ran into when I decided that it might be real fun to operate two meters airborne. I set up the Gonset in the plane, powered by the C-D Powercon. It worked just fine until the prop started turning, then everything dissolved in a thunder of noise. Investigation indicated that the only answer was a shielded ignition system. Two weeks and \$125 later I finally got the shielded ignition system installed. I won't go into all of the frustrations and endless trips 50 miles out on the Island for parts. Finally we had it in and a quick test showed that the ignition noise was indeed much lower. I packed the Gonset and Powercon in the plane and headed from Brooklyn up to visit my folks in northern New Hampshire. As soon as I had the plane up high enough so I was reasonably sure it wouldn't fall back down I switched on the Communicator and tuned two meters. The horizontal whip taped to the strut was working fine and signals came rolling through from all over. I talked steadily to one station after another all the way to my gas stop in Springfield, Mass. Sixteen contacts in 75 minutes.

There were fewer contacts as I got into the more northern parts, but W1FDO down in Bolton, Connecticut was able to hear and talk to me all the way from Brooklyn until I shut down to land at Whitefield, N. H. I buzzed the family and then landed at a nearby lake.

The trip back a few days later had a couple of interesting moments. Flying a seaplane over land is a bit more reassuring when you are in constant radio contact this way . . . and I have no other radio in the plane. As I got down to Stamford, Conn., one of my cylinders stopped working and I had to use full power to maintain altitude. I would have dropped right into the Stamford seaplane base except for running into KN2BNQ/Airborne who promised to keep tuned to my channel and call the CAP should I be forced down. I made it back to Brooklyn all OK, but the two meters sure made it a lot less strain.

If I can round up a six meter Communicator I will have a try at airborning this too. My little Gonset worked out over 150 miles easily from about 3000 feet on two meters, making flying really fun. It does keep you busy since you have to fly the plane with one hand, navigate with one hand, run the rig with one hand, and keep the log with the other. Comes lunchtime and you really are busy.

Mobile

When the '57 model cars were announced a year ago I got to work and yanked all the radio equipment out of my 1954 Ford Station Wagon. All that stuff went up on the shelf since I decided that I would try to arm myself with the latest for the new car. After shopping around for the best looking station wagon I could find I ended up with another Ford Country Squire. About that time I was promised a new transmitter by one of our manufacturers so I decided to wait until it came before starting the whole installation.

Since a car gets little use in New York (I average only 500 miles per month) I was able to wait for over six months before getting fidgety. Then one day Marty Battan W2JKX, the local rep for Creative Electronics, mentioned that he had heard my airborne two meter distress contact. He wondered if I was interested in trying the new Transcon-6, a combination six meter transmitter-converter, in my car or plane. Sure I was. That was all it took to get me busy installing stuff in the car.

Designed for



Application



90672

The No. 90672 ANTENNA BRIDGE

The Millen 90672 Antenna Bridge is an accurate and sensitive bridge for measuring impedances in the range of 5 to 500 ohms at radio frequencies up to 200 mc. It is entirely different in basic design from previous devices offered for this type service inasmuch as it employs no variable resistors of any sort. The variable element is an especially designed differential variable capacitor capable of high accuracy and permanency of calibration over a wide range of frequencies. A grid dip meter such as the Millen 90651 may be used as the source of RF signal. The bridge may be used to measure antenna radiation resistance, antenna resonance, transmission line impedance, standing wave ratio, receiver input impedance and many other radio frequency impedances. By means of the antenna bridge, an antenna matching unit may be adjusted so as to provide the minimum standing wave ratio on the radiation system at all frequencies.

**JAMES MILLEN
MFG. CO., INC.**

MAIN OFFICE AND FACTORY
**MALDEN
MASSACHUSETTS**



I decided to put in the G-66 since I hoped eventually to get some sort of rig for all band operation, and use the broadcast band of this to go with the Transcon-6 converter rather than hooking it into the regular car BC receiver. In they went one Saturday afternoon and within a couple hours I had the old Saturn-6 antenna out, clamped on the rear bumper, and was in contact on six with a few locals. Gee, the rig worked fine. Then I turned on the engine! Everything disappeared in the 20 over 9 noise level.

The Mobile Handbook (by Bill Orr, of course) had all the answers on this. They said that all I had to do was get some Erie resistors for the spark plugs and three Sprague Hy-Pass condensers for the other gadgets. What could be easier. I first tried the two largest radio parts houses in Brooklyn . . . they never heard of either of 'em. Then I tried several auto supply houses: NG. Then I drove over to Manhattan, determined to lick this problem. I started at one end of Cortlandt Street (radio row) and went all the way to Harrison Radio before I got the Sprague condensers, cooling my heels in eight stores on the way, waiting for them to take their sweet time to wait on me. No one had the Erie resistors.

Well, if I couldn't get the resistors I'd have to get the Autolite resistor spark plugs instead, even though they cost a lot more. Consulting the phone book, I called all of the listed distributors of Autolite plugs in Brooklyn . . . none of 'em had my size. One offered to get 'em for me. A few days later he called, I drove out . . . "sorry, guess we got the wrong ones." I started calling some more and located the right ones at last. As soon as they were in "poof" went the noise. A whale of a difference.

After talking to an interference specialist (W1ZKD) I find that resistor spark plugs are not good for the engine and that the recommended system for noise reduction is to use shielded plugs, shielded ignition wires, shielded distributor, etc. This is what I had to do on my plane and that little four cylinder job cost me over a hundred dollars to get shielded. I'm going to be investigating this situation more and I'll let you know if I find any reasonable quieting system.

With the car noise down to an S-7 I could at least operate on six meters with no problems and quite a few solid contacts were made.

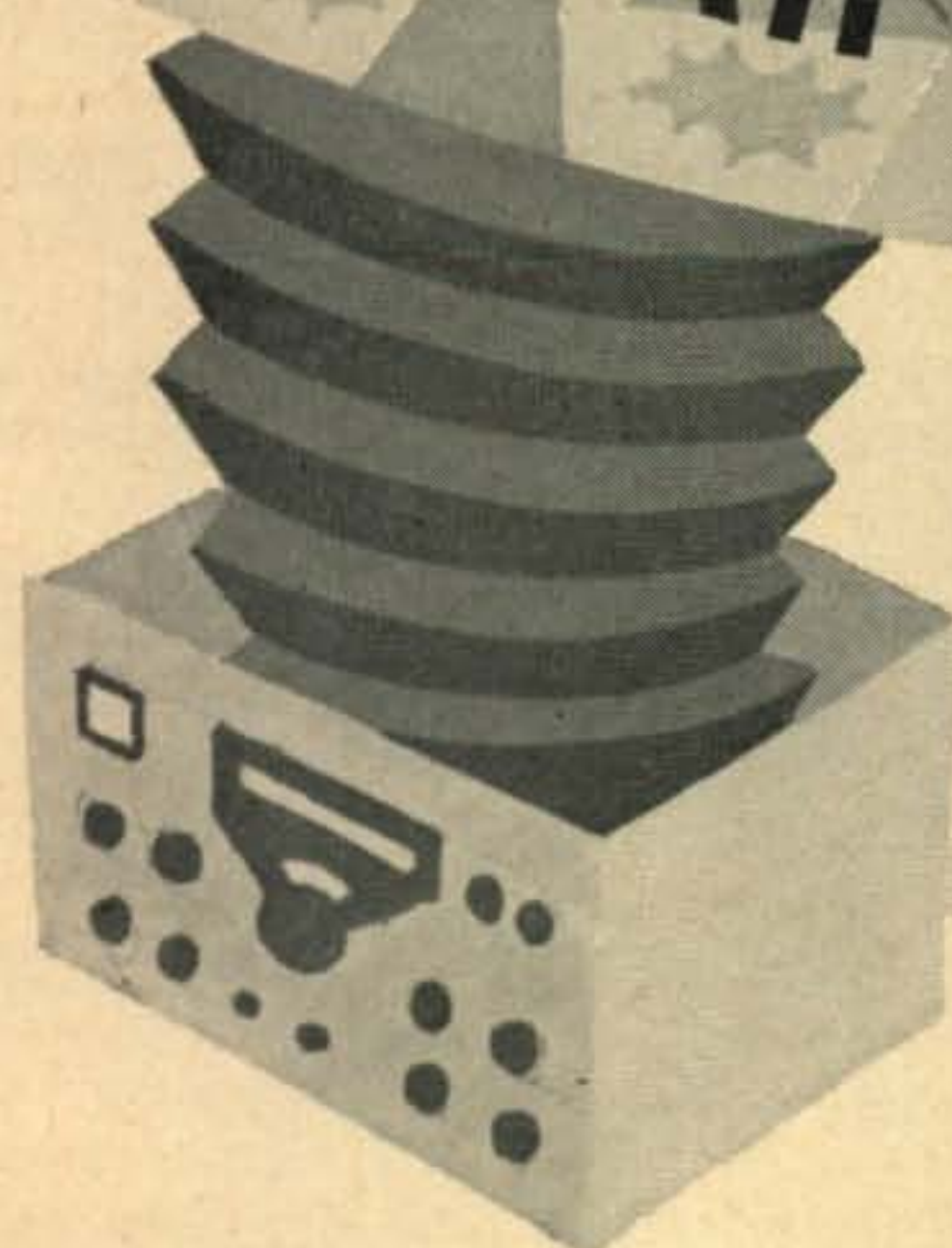
That being done, I decided to get one of those new \$29.95 Gonset Short Wave Converters which operate directly off the 12 volts and play through the car radio. Installation took only fifteen minutes . . . just a matter of screwing it to the dashboard with a couple thumb screws, clipping onto the 12 volts from the back of the lighter, and running the broadcast antenna through it. It has four short wave bands: 49 and 31 meters for night, 19 and 13 meters for daytime. A push button selects the

[Continued on page 108]



MERRY CHRISTMAS

From All of Us to You



K6AFH
K6ANN
K6AVP
W6AY
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K6BCM
W6BDN
W6BHI
K6BJ
W6BMU
W6BZ
W6CBN
W6CDT
W6CEO
W6CHE
W6CJL
W6DJI
W6DOZ
W6DUW
W6DVB
W6DWM
W6EK
K6ENX
K6FJN
W6FKS
W6FYM
K6GJF
W6GMK
K6GPX
W6GVY

W6HB
W6HHN
W6HIK
W6INJ
W6IQO
W6IVZ
W6IXD
W6JFV
K6JJI
W6JOR
K6JUL
W6JZ
W6KEV
W6KM
W6KRR
W6KSU
K6KWE
W6LAD
K6LCO

W6LOZ
K6LYE
W6MGO
W6MUC
W6NBD
W6NGP
W6NYD
K6OAZ
W6ODT
W6OHU
W6OMC
W6OMD
W6OS
K6OUS
W6PHS
W6QQV
W6RWI
W6RXW

W6SC
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W6VYH

KN6VZU
W6WBC
W6WC
W6WSL
KN6YBO
K6YEM
KN6YKD
K6YRQ
W6YSX
KN6YYP
KN6YYV

W6ZGV
W6ZIU
W6ZLB
W6ZVV
W2LJI
W6IUK
VE2AGF/W6
W7HDI
W7NPY
W7SLC

W5FBL
W7YWL
W1KKP
W2CN
W2QA
K4AIM
W4DLL
W4TO
W6ENV
W6JBC
W6QD
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W9A1O
W0AZT
W0NWW
W0RPE
W2VL



EITEL-McCULLOUGH, INC.
SAN BRUNO · CALIFORNIA
The World's Largest Manufacturer of Transmitting Tubes

For further information, check number 7 on page 124.

"Phasemaster II-A"

IMPROVED AND ADVANCED OPERATING FEATURES

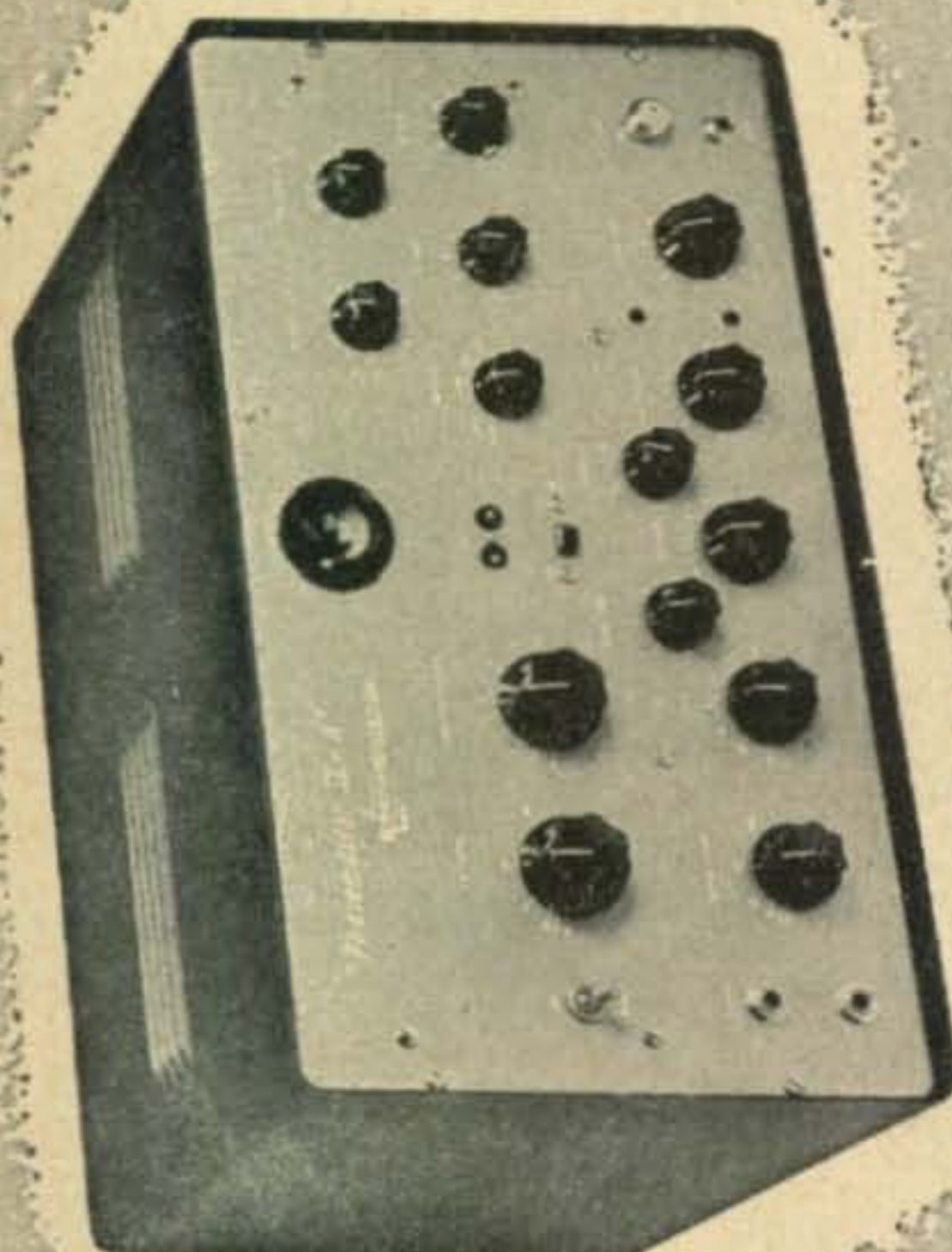
SSB or DSB suppressed carrier or with carrier, PM and CW.

6146 power amplifier delivers 65 PEP watts output, giving sufficient power to drive nearly all types of linear amplifiers INCLUDING grounded grid finals.

Calibrate control allows variable control of signal for zero beating VFO to receiver frequency or TOF (talk on frequency.)

Voltage Regulation of 6146 Screen and 9MC OSC.

Temperature compensating condensers in critical 9MC circuit for improved stability.



ALL BAND OPERATION

FRONT PANEL OPERATING CONTROLS

Emission switch with 5 positions for selecting CW PM — AM or DSB — Sideband 1 — Sideband 2

Indicator Switch —

Position 1. Tuning eye indicates R.F. output.

Position 2. Tuning eye indicates when flattopping occurs.

Valuable aid for tuning up on AM and as a Distortion indicator for SSB.

"Phasemaster II-A" complete \$329.50

"Bandhopper" VFO complete \$139.50

P-400 Grounded Grid Linear Amplifier \$269.50

Price and design subject to change without notice.

See Your Dealer or Write Today

Lakeshore INDUSTRIES

MANITOWOC, WISCONSIN

MANUFACTURERS OF PRECISION ELECTRONIC EQUIPMENT



Feenix, Ariz.

Deer Hon. Ed:

The wether this time of yeer are reely getting cold. Yes indeedy, a person are having to dragging out there winter clothes and turning off the air condishuners. You not buleeving it, Hon. Ed., but are having nites when temperachure are going all the ways down to sixty-five degrees. In fackly, it are this cool nippy wether that cawsing everybody's out here to thinking about there mobile rig, and Hon. Scratchi are no eggscepshun.

Howsomever, this yeer are not just going to use selfsame old mobile rig. Not on your toob tipe. This year Scratchi are going to doing things diffrently. Are desiding this parshally on acct. just wanting to doing things diffrently, and parshally on acct. if can't getting new car, can at least being diffrent by installing something diffrent in the old beet-up reck I are having.

Hon. Ed., my car are so old they not only not listing it in Blew Book but can't even finding spare parts for it in junk yard! By now, of course, it are having so many kinds parts on it that it not even having name. Can't even bying lisense plates for it as a car. State Hiway Comishun are calling it truck so having to by truck lisense for it. So, you can seeing how-comes wanting to having sooper-speskul mobile rig in it.

Are doing lots of thinking, and finely desiding that signal putting out from mobile rig depending mostly on the antenna. So, what are needed are 1/c whing-ding speshul antenna. On freakwencies I using, are desiding that rotory beam are the ticket. After all, why having to point car, why not just rotating rotory beam? That way having all the comforts of home stayshun.

After cupple trips to Feenix junk-yards and digging around for stuff in Hon. Brother Itchi's barn, are having everything I are needing. Drilling hole thru top of car over back seet, putting rotater in place where back seet should be if having one, making bareing for roof, bringing pipe thru, putting on boom and elements, and there you are, slickest rotory

The New Ideas in communications are born at hallicrafters

Brilliant performance! The SX-99 receiver features broadcast coverage 540-1680 kc plus three S/W bands, 1680 kc—34 mc. Bandspread calibrated over 10, 11, 15, 20, 40, 80 meter amateur bands. Antenna trimmer, "S" meter, crystal filter. Seven tubes plus rectifier. Black cabinet, silver trim, piano hinge top. **Model SX-99—\$149.95**

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SX-99**



**MODEL
SX-100**



**MODEL
SX-101**



**MODEL
HT-32**



**MODEL
HT-33**

Cleanest signal on the air! Hallicrafters new HT-32 transmitter brings you a new standard of clarity with two exclusive features: (1) 5.0 mc quartz crystal filter—cuts unwanted sideband 50 db. or more; (2) new bridged-tee modulator, temp.-stabilized and compensated network provides carrier suppression in excess of 50 db. SSB, AM or CW output on 80, 40, 20, 15, 11-10 meter bands. High-stability gear-driven V.F.O. 144 watts peak input. Ideal CW keying and break-in operation. **Model HT-32—\$675.00**

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For further information, check number 9 on page 124.

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mobile beam you ever seeing.

Driving car up by window of Hon. Shack, running out antenna lead from main stayshun, and trying out beam. Seeming to loading up like sixties, so giving short five-minute seek-you, and razing XE like nobuddies business. He giving me report that needle are on the pin, so desiding that everything are hunky-dunky.

I would have turning beam and trying some other direckshun, but can't turning beam on acct. car are to close to house and beam kinda sticking out over both sides of car. Wondering if being able to passing cars on road, but then remembering that beam are hi enuf so it going over top of cars so not worrying.

Only one other thing now worrying me, and that are the mobile rig itself. It are sort of a mess. Oh, it putting out the power okey, but are reel mess on acct. I never fastening it down, and it just rattling around in trunk of car. Case are all out of line, front panel badly bent, and knobs are missing.

Howsumever, the more I thinking about all the work would be having to do, the more I thinking that as long as it putting out desent signal, no reeson to prettying up mobile rig. The leest I can do, tho, is to making sure it fastened in trunk reel tite.

So, getting for big bolts and Brother Itchi's power drill, and drilling for big holes rite thru floor of trunk, then, to saving having to getting under car, are forcing bolts into holes with hammer, and screwing them in with monkey rench. Mounting mobile rig to for bolts, and there you are. Nothing going to moving that rig unless car are moving to, you can betting your bottom dollar, Hon. Ed. Taking egg-ploshun to getting that mobile rig out of trunk.

Next are tying trunk lid shut. Can't latching it on acct. not having handle since bying the car. Starting motor, turning on rig, and driving down driveway so can getting out on highway to working some dee-x.

Thinking maybe better just trying rig once before leeving the ranch, so hitting mike button. Just then, A-bomb going off under car. B a r o o m ! ! At least it seeming like A-bomb or H-bomb or something. Are heering more noyse in one second than are heering on 20-meters fone all evening.

Hon. Brother Ichi running out of house and helping me out of car. What a mess!! Hon. Ed., even you not buleeving. Trunk of car not even there any more. Just empty space. Both reer tires flat. Rotery beam bent and hanging down in back of car. Hoe thing looking like big garden rake hooked to back of to wheel car.

Looking around and finding pieces of condensers, tooobs, and part of front panel. What are happening, you say? Well, remembering me telling you it taking eggsploshun to getting rig out of car? That what it were. Itchi and I figyuring it out.

[Continued on page 104]



HQ-110



HQ-100



HC-10



HQ-150



HQ-140-XA



Established 1910

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There's no trick to it... just down-to-earth facts... Hammarlund receivers are designed to incorporate better circuitry and components in such a manner that labor is held to a minimum. The result is a better performing, longer lasting receiver at a lower price. Compare — and see for yourself...

HQ-100 GENERAL COVERAGE RECEIVER. Continuously tunable from 540 KCS to 30 MCS. Electrical bandspread. 10-tube superheterodyne with noise limiter. Q-multiplier. Exclusive Auto-Response for optimum listening under all conditions. **\$169⁰⁰***

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Canada: White Radio, Ltd., 41 West Ave. N., Hamilton, Can.

For further information, check number 10 on page 124.

Letters . . . to the editor

What? Me?

Wayne:

Say, what's this? Does the concept of 'meatballism' indicate that Hon. CQ Editor is a reader of MAD magazine? Are you a true 'night people'?

John Axline, W8SUB
Parma, Ohio

From Volume 1, number 1, John.

First Ship to go Thru N. W. Passage

Dear Editor:

At the present time I am on the CGC Bramble, having just about completed a trip around the big chunk of land called North America, being the first or should I say one of the first to ever make the trip flying the flag of the United States. The honor is also shared with the U. S. CGC Spar and U. S. CGC Storis, the CGC Spar having a rig aboard for the trip also, his call being W1WIN/MM. I am also KØACD/MM at the present time. However, on the ship's return to Miami, Fla., I must change back to plain ol' KØACD/FP4, so will be missing a lot of those good QSO's that come to the MM crew.

I think this is the first time that ham rigs were allowed to be used aboard government vessels, but I hope that the other, I believe there were five in this year's Arctic operations besides W1WIN and myself, have proven to the Navy and the Coast Guard that it can be done without fouling up the regular routine communications of the ships. And if we have, then maybe from now on they will permit more rigs to go aboard the ships. For us it has been pretty nice. It's one way to stay in contact with the family and friends which is one of the things the ships need most. If I ever have the chance to thank the people that have helped us on this trip by taking MSGS and working patches for us over the heavy QRM on the 15m band, I couldn't ever thank them enough. This is a step forward for the hams in service and no real home QTH where they can set up a permanent station.

As for complaints on the mag, have none and thought it was about time to start getting it every month by mail instead of having to hunt up a fair to middlin mag store. Many thanks.

Albert F. Regler
Miami Beach, Fla.

Power Supply

Dear Sir,

I have been receiving too much mail to answer individually concerning the power supply described on pages 28 and 29 of the September issue of CQ. I do try to answer the letters that include a return envelope, but since most of them ask the same questions, here are the answers.

It is necessary to use the special core mentioned, or an equivalent. Cores of this type are available through regular parts jobbers. They are used in quantities in most airborne telemetering equipment because of their size and efficiency. If an attempt is made to use regular core material, even though extremely close contact is effected between core laminations, the leakage reactance will cause an inductive kick each cycle. Unless the transistors used have an extremely high power rating, this inductive kick will burn the transistors out instantly.

Also, to operate the supply with a lower input voltage, it is necessary to consider the heavier current drain through the transistors and to select power transistors accordingly. Many power transistors of improved characteristics have been released since the article was prepared, and a little time spent reviewing the latest releases in the light of the desired application will undoubtedly save the builder some money and will provide a unit capable of higher output.

Again, let me caution builders that the output of the switching transistors must work into a load that looks as nearly like a pure resistance as possible; reactive components at this point will destroy the transistors instantly.

Earl Stowell
1509 So. Fourth Ave., Arcadia, California

Emblem

Dear Wayne,

In the September CQ issue, on the editorial page, you say "Gentlemen, we need an emblem . . . a fraternity pin". This has hit a sour note with me.

Wayne, the fraternity already has the BEST emblem that we could ever have, the American Radio Relay League emblem. This emblem is already known to more hams and lay-people as the hams emblem than any new emblem could possibly accomplish. It represents ham radio back to its founding by Hiram Percy Maxim.

I frankly believe that your suggestion of a new emblem, while undoubtedly done in good faith, will result in more confusion in identifying the ham. I consider your suggestion a dis-service to the fraternity.

I therefore suggest that in the interest of "closing ranks" in unity within the fraternity, you promote the "Hams Emblem" . . . the "ARRL Emblem".

CC: ARRL

Eugene A. Wille, K5CWM/W9EQU
Hauula, Oahu, T. H.

Well Gene, the ARRL Emblem is a nice one, but less than half of the amateurs are members of the club. Also, as you realize, there are strong feelings, both pro and con, within the amateur ranks about the ARRL. Then too there is the fact that the ARRL pin just isn't being worn much. A discussion with an expert on such matters pointed out that an emblem, if it is to be popular for business wear, must be inconspicuous. Therefore I suggested that a small pin be designed for all members of our vast fraternity to wear. If the ARRL will provide a pin which is 1/2 to 3/4 the size of their present pin and make it available to all amateurs, regardless of their club membership, then I will certainly do everything I can to help promote it. In the meantime I am looking for a good design and welcome all suggestions.

More On Eleven

Dear Wayne:

I have just completed an informal tabulation of the comments filed by individuals or groups with the FCC regarding Docket 11994 (Loss of 11 meters) and I thought you would be interested in the results.

As of 4:00 p.m., July 31st, 1957, 386 individuals or groups have taken time to write the FCC and comment on this matter. Here is the way it breaks down:

Amateurs or amateur groups opposing change	362
Amateurs in favor of change	1
Model users or clubs favoring change	91
Model users opposing the change	0
Non-model users favoring the change	2
Electrical manufacturers opposing the change	2
Manufacturing firms commenting on technical features	5
Senators contacted by amateurs	4
Senators contacted by model users	2
Ohio novices opposing change	1

Total comments (including mine) 470

One of the non-model users was a livestock firm in Wyoming. The other two seemed to want to operate radio communications in that band, while all of the rest of the comments in favor of using the frequencies for non-amateur use was model control groups, mostly for the control of model aircraft.

Three amateur groups had referred the matter to their senators; five to their congressmen; the model makers had contacted nine senators and ten congressmen.

It must be recognized that one month remains for filing comments. However, based on the filings to date, it seems as though it becomes a problem of taking the band away from the amateurs and giving it to the model makers. I note that many had written in postal cards. They were duly displayed in the docket file. However, to be effective amateurs should identify themselves as amateurs, and give a reason, or better, reasons why they are opposed. Just to say "We are agin' it!" is not enough. Also you can note a pick up in comments after you first printed the matter.

That's the way it stands now. We must keep up the fight.

Les Harlow, W4CVO
Alexandria, Virginia

A Merry Christmas

and

Happy QSO's for 1958



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For further information, check number 11 on page 124.

December, 1957 • CQ • 15

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OK You Technicians



Gentlemen:

Enclosed is a picture of my son Billy, K5LWL. Billy passed his Novice test in July 1957 and passed his General test September 15th, 1957. Billy is only eight years old!

Dr. R. W. Bradford K5LPE
Buna, Texas

More Save Eleven

Dear Editor:

I, Jeep Mahoney, W5BVX, am twitterpated. Reason, somehow you missed my entry in the Save Eleven Meter Contest. I feel it was a typographical error, or my log was lost. I am enclosing a carbon copy that I still have on hand. Ordinarily I would not make mention of such a slight oversight, me being the sly blushing violet type, but I will be forever hounded by the Eleven Meter gang unless I do something to rectify this horrible mistake. The NADA (National Association of Diathermy Amateurs) will give me no rest until I prove without doubt that I was in that contest. You see, I am one of the oldest members.

My first contact was 2100 on March 13, 1946. W9NJT (deceased), W2GX (deceased) and W6CQG were the first on the band as they had special permission from the FCC to try the band and exploit its feasibility for operation through the Diathermy. This was before the band was officially opened. I have operated the band consistently since 1946 and go fishing when the band is dead. You can see why the name "Jeep" and eleven are same as married, and I'm in for it if I can't prove that I, of all people, was in on the Save Eleven deal. I will fight for Eleven until my breath dies. I have had ten phone calls plus a lot of static on the band asking about my call being absent from the contest. Please, can't you find me on your list?

I will be QRT until I find something in print. I just can't face W5AKB and the rest.

By the way, KP4AEB, the winner is a brother in a monastery in Puerto Rico. We were very happy to hear that Bob, a real 11-meter ham, won it. Also KP4AGS at the same QTH. KP4AEB carried the ball all summer when the stateside boys listened to an otherwise dead band. For real "ham feeling" get on Eleven. It's like old 160 meter band. C U there.

Eugene "Jeep" Mahoney, W5BVX
ex W9ZIE, W4NUJ, W2EHQ, KX6BP

Sorry Jeep, we goofed.



The smile of Mary Burke, W3CUL, 1956 Award winner, shows appreciation of the honor being paid to all radio amateurs. Mrs. Burke is receiving her Edison trophy from L. B. Davis, general manager of the General Electric electronic components division. Center: Rear Admiral H. C. Bruton, chief of naval communications.

JANUARY 3 FINAL DATE FOR MAILING EDISON AWARD NOMINATIONS!

LETTERS naming candidates for the 1957 Edison Radio Amateur Award must be postmarked not later than January 3, 1958. If you have not yet sent in your nomination, act soon! Time is growing short.

Only amateurs named in letters from you and others are eligible for the Award and will be considered by the judges. You will be aiding the entire amateur group by choosing a candidate.

The activities listed at right are among many which can qualify an amateur for Award consideration. Someone you know may have rendered important service along these or similar lines. Be sure to submit his name!

It is easy to nominate for the Award. See the rules and terms in the September issue of this magazine. Or write direct to *Edison Award Committee, General Electric Co., Electronic Components Division, Owensboro, Ky.*

HERE ARE TYPICAL ACTIVITIES THAT CAN QUALIFY FOR THE AWARD:

Emergency communications work in a disaster, such as a flood, hurricane, tornado, or an explosion.

Relaying messages from remote points for the benefit of isolated servicemen and civilians.

Teaching young people the elements of electronics.

Helping amateurs and others with their specialized problems, through professional knowledge and experience.

Publishing a book or other literature that contributes to general scientific knowledge or procedure.

Helping disabled or physically handicapped persons.

Designing and constructing radio equipment for use by persons in remote parts of the world who do not have access to regular commercial communications channels.

Civil-defense organization work; weather reporting; radio assistance to state or local traffic and police authorities; co-operation in forest-fire prevention and control.

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166-182 For further information, check number 13 on page 124.

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I am enclosing ☐ check ☐ money order in the amount of
\$16.50 for a TOROID TRANSFORMER, or in the amount of
\$27.50 for a Toroid Transformer and two matching power
Transistors. ☐ 12 volts ☐ 24 volts

Name

Address

City.....Zone.....State.....

For further information, check number 14 on page 124.

Photographic QSL's

Dear Wayne,

I hate to say this, but one of CQ's contributors goofed on a small detail which bears correction.

In Mr. Weldon Johnson's article, QSL's the Photographic Way" (Sept. '57) there is the statement on page 110 to the effect that the Eastman Kodak Co. makes a contact printing photographic paper on post card stock, but doesn't make a projection paper on this stock.

This is at variance with the facts. We manufacture Kodak Post Cards in both emulsive types—and have for more years than I can recall. AZO Post Cards are for contact printing and KODABROMIDE Post Cards are for projection printing (enlarging). The AZO cards are available in two surfaces (glossy and lustre) and four contrast grades. The KODABROMIDE cards are available in one surface (glossy) and four contrast grades.

Both types are available in packages of 25, 100, 500 or 5,000 cards through regular Kodak dealers.

Allie C. Peed, Jr. K2DHA
Rochester, N. Y.
Sales Service Divn.

Dial System CW



Dear Editor,

I am 18 years old. I have cerebral palsy and go to the Glendale Home School.

I received my novice license in June and sure enjoy it. I have some trouble with my hands so Mark, K6CQO, helped me fix something to send code with. It is made up of 19 telephone dials. It works real good. I can send about 13 wpm. I am sending a picture of my rig. I wish you would use it in your CQ magazine to show other handicapped people.

My call is WN6LKJ.

Sincerely,
Terry Tatum, WN6LKJ
Glendale, Calif.

SWL's

Dear Wayne,

I hope you realize the views expressed by short wave listener William N. Roemer in his letter of October, 1957 are not necessarily those held by the majority of listeners.

It is my firm belief that amateur radio can and will perform greater services on behalf of the general public than any amount of propaganda broadcasts. In view of this, I have no objections whatsoever to hams obtaining the frequencies now in use by short wave broadcasting stations.

William J. Speedie
La Crescenta, California

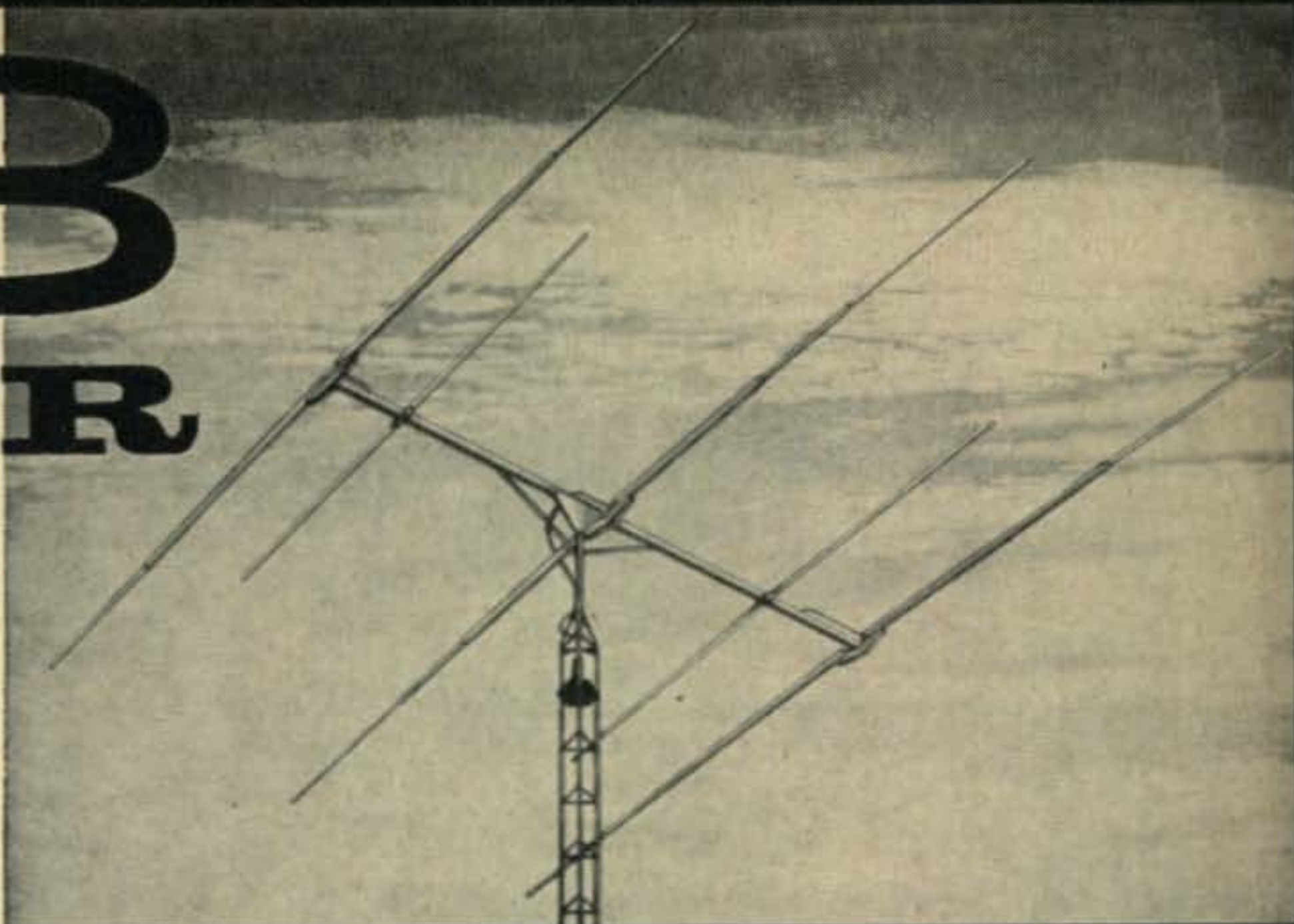
Dear Wayne:

Sa, the letter from one of your readers was a new high point in satire. I think that it will replace Scratchi if you can continue it on a monthly basis. After such a timely plea for the reader I am afraid that you do not stand much of a chance to get the 19 and 25 meter bands for the hams.

Don Stoner, W6TNS
Ontario, Calif.

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The long-awaited, coil-less
fully streamlined beam
that gives you three
full sized elements on
10-15 and 20 meters.



No cumbersome coil traps! Mechanically strong yet lightweight . . . assembly is simple, rapid. Beam is maximized for all bands by setting coaxial tuning sleeves to pre-determined positions supplied. No instruments needed . . . you tune only with a tape measure!

NO COILS!



strong . . . lightweight . . .

HIGH GAIN

Gains are equal to full length beams on all bands. Average 3-element values are: 20M, 8.2 db. 15M, 8.1 db. 10M, 8.4 db. Front-to-back ratio, typical, 24-28 db.

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Beam is fed with single RG8/U coax. VSWR is 1.4 (or less) all bands.*

* DEPENDS UPON HEIGHT ABOVE GROUND.

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HOW IT WORKS . . .

Gonset's unique triple-sleeve concentric element sections, (pat. applied for) effectively act together for the lowest band, (20M) and electronically disconnect successive outer sections for operation on the 15 and 10 meter bands.

TUNING . .

The 10 meter band requires no tuning since separate fixed-length director and reflector are used. On 15 and 20 meters, driven element, reflector and director are aligned with tuning sleeves, (no coils) which slide inside of the two inner concentric elements. Once set, these sleeves are permanently clamped in position. The element lengths do not change. Boom is 18', longest elements 31' 1".

2-element, #3219. 3-element #3220

Both 2 and 3 element beams are available in the 3-bander series.

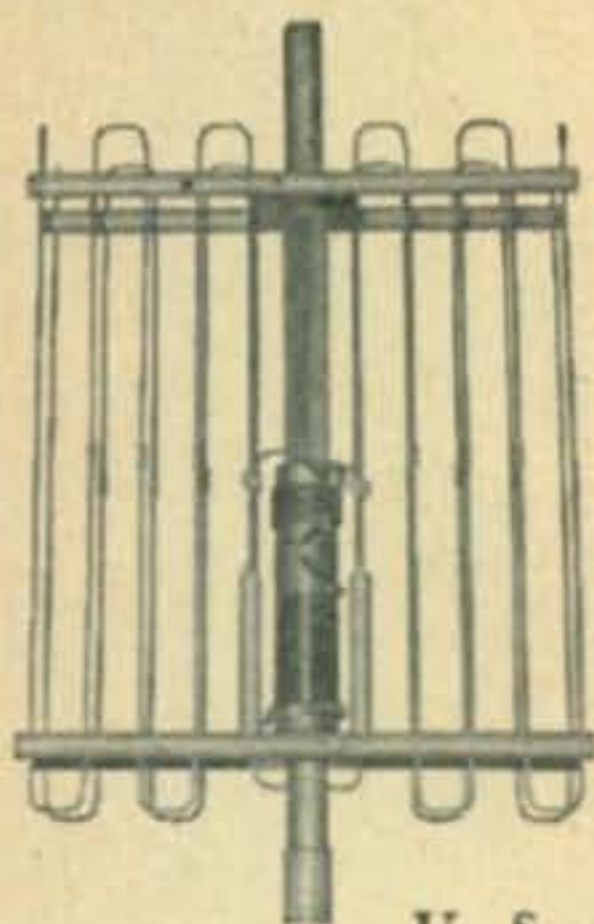
For further information, check number 15 on page 124.

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Frequency coverage:
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Power input up
to 500 watts.
Silver plated for
peak efficiency
and weather
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For further information, check number 16 on page 124.

Stolen as usual from

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Wash., D. C. Mobile Radio Club

OK, come to order here. Confound it, I
turn my back for a minute and someone goofs.
Last month the printer (grrr) managed to
make a wee mistake in question #2. You should
have been able to work your way around this,
but if you panicked, then we'll let you have
another try at it, set right this time.

$$\begin{array}{r} * *) * 9 * * * (* * * \\ * * \\ * * * \\ * * * \\ \hline 2 * * \\ * * * \end{array}$$

This one can be worked . . . took me about a
half hour. I'll give you ten minutes as par,
fifteen minutes for slow thinkers, and twenty
minutes for SWL's. The answer is on page 92
in case you chicken out. Don't look until you
try the following too.

The answer to #1 last month was 180.
#3 you figure out. So, here we are, ready for
this months brow furrowers. That division
problem was so much fun last month, lets
try a similar teaser.

$$\begin{array}{r} x x 7 x \\ x 7 x \\ \hline x x x x x \\ x x x 2 x \\ 8 x 5 x \\ \hline x x x x x x \end{array}$$

In case you can't stand to wait until next
month for the answers we'll just hide them
back with the answers to #2 from last month.
#2. A calculus problem . . . heh, heh. The
room is eight feet high, but a square chimney
4 feet on a side goes up from the center.
What's the longest pole that can be put up
the chimney without bending the pole?
#2. Alice is as old as Betty and Christine
together. Last year Betty was twice as old as
Christine. Two years hence, Alice will be twice
as old as Christine. What are the ages of all
three girls?



Let 'em know we're in trouble and then you can
finish your 2 meter WAS!

Johnson amateur equipment . . .

YOUR BEST BUY THIS SEASON OR ANY SEASON



BIGGEST AMATEUR CATALOG EVER!

Write today for your free copy of Johnson's big new 1958 Amateur Catalog. Packed with complete specifications, photographs, and schematic diagrams, this 28-page catalog covers all amateur transmitters and accessories in the Johnson line.



E. F. Johnson Company

2827 Second Avenue S.W.

Waseca, Minnesota

For further information, check number 17 on page 124.

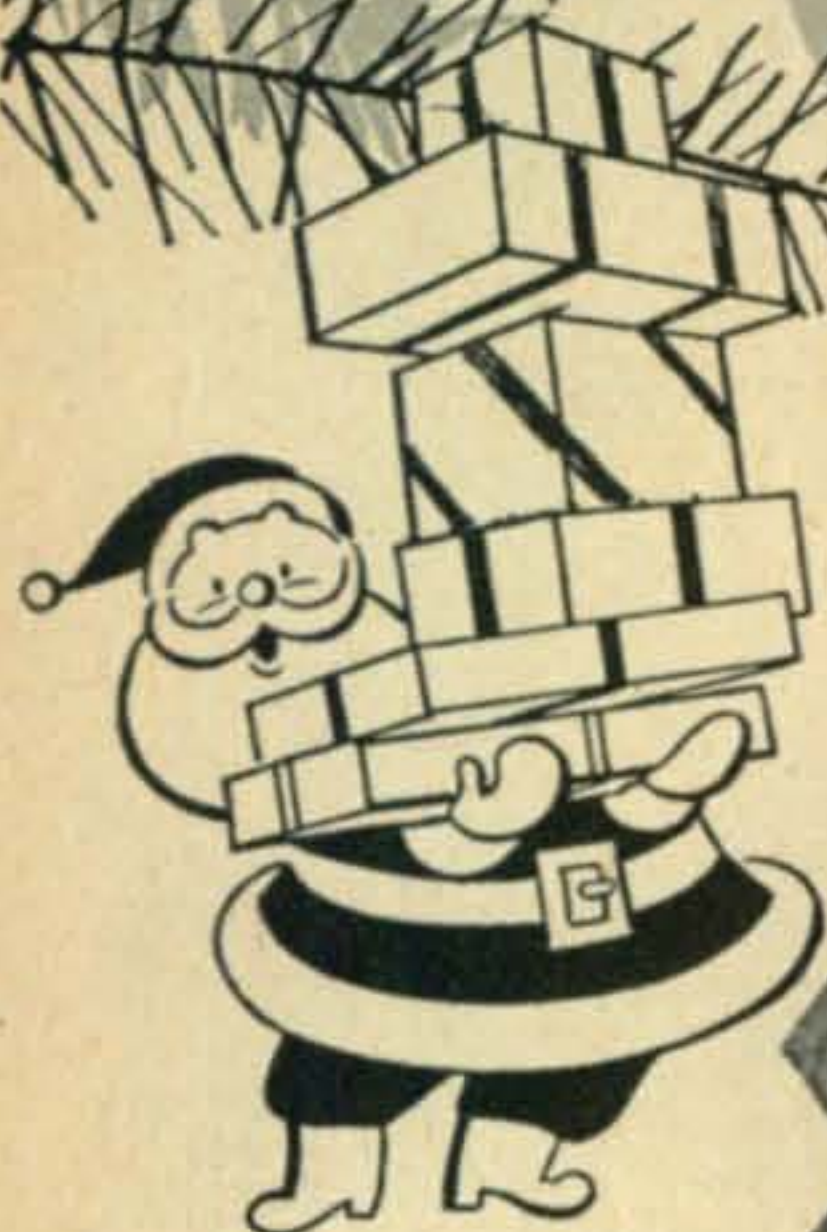
December, 1957 • CQ • 21

**BOXED, WRAPPED
and DELIVERED!**

International's

CHRISTMAS GIFTS

for HAMS!



This year, for a happy Christmas Day in many Ham Radio Shacks, International improves its Christmas Gift Service still more by providing special Christmas Gift Wrapping, inside the shipping container. A few of the many International printed circuit units are shown here as Gift Suggestions . . . boxed, wrapped and delivered, with your card enclosed.

T-12 TRANSMITTER

3500-4000 KC

Only 3 1/2" x 6" x 3 1/4" . . . the new T-12 Transmitter makes many DX contacts, with careful operation under good conditions.

Pi-network output enables operator to couple into almost any type antenna. Has low drive oscillator with International FA or F-6 crystals; may be used in close tolerance applications. 12BH7 oscillator-buffer and 5763 final.

7000-7300 KC

Power Requirements: Filaments 6.3 VAC @ 1.35 amp. Plate supply 350 volts dc @ 50 mls. Separate B+ input connection to final for addition of modulation. Crystal frequency same as output frequency; uses straight through operation.

PRICES

- T-12 Kit less tube and crystal **\$ 8.95**
- T-12 wired, with tubes less crystal **13.95**
- FA-5 Crystal frequency (specify KC) **3.00**
- Special T-12 Kit less tube, with one 80 or 40 meter crystal (specify KC) **10.95**
- Special T-12 wired with tube and one 80 or 40 meter crystal (specify KC) **15.95**

Shipping Weight **1-lb.**
(See "How To Order" on next page)

- **LOW COST**
- **SIMPLE TO OPERATE**
- **LOW COST POWER SUPPLY**

For further information, check number 18 on page 124.

FCV-2 CONVERTER

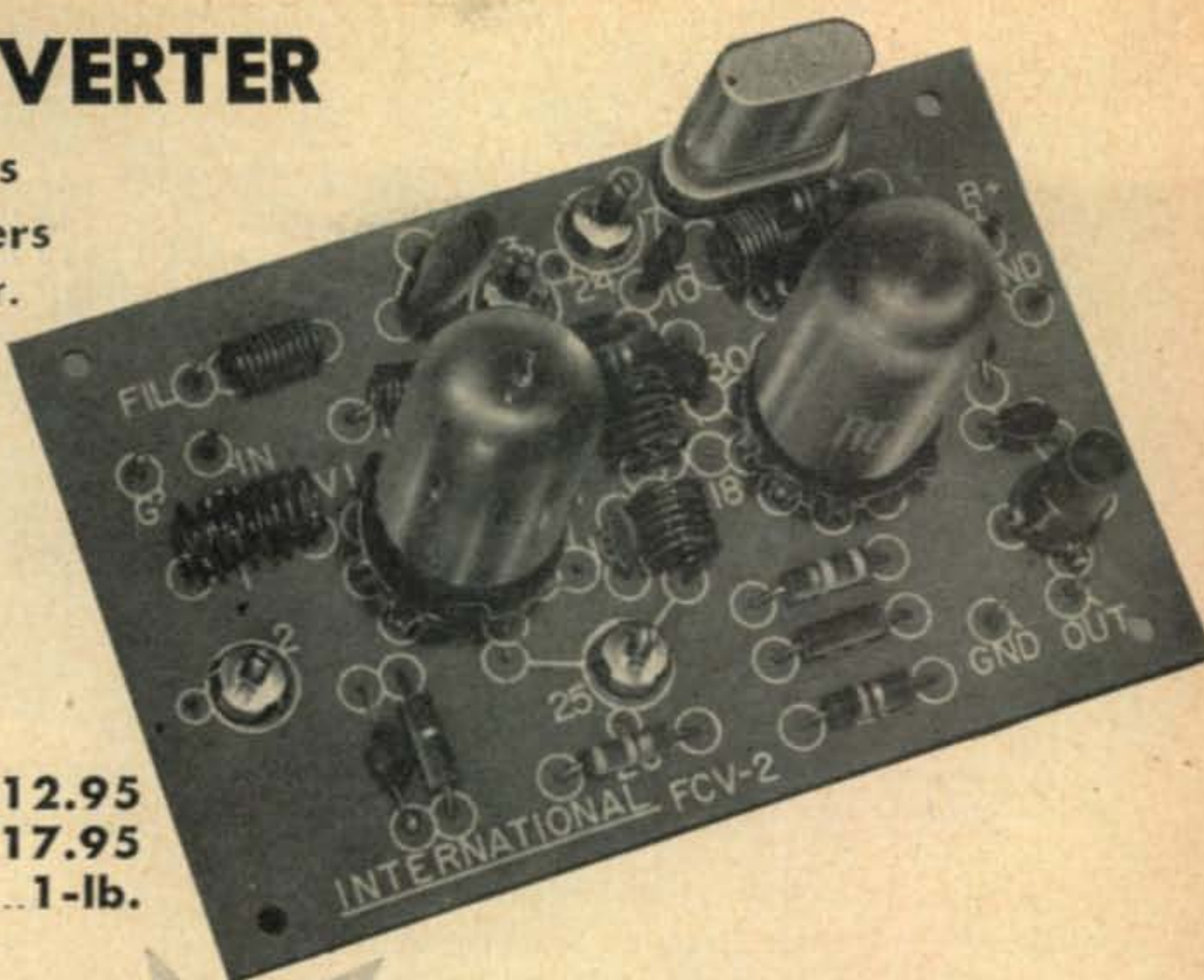
- Model 50 - 6 Meters
- Model 144 - 2 Meters

A 6U8 tube is used as oscillator-mixer. Cascode r-f amplifier using 6BQ7A. IF outputs available from broadcast band through 30 MC. (Two standard IFs are available, 600-4600 KC, 7-11 MC; others on request)

Designed to mount in a standard 3" x 4" x 5" minibox.

PRICES

Kit with crystal (less tubes) \$12.95
 Wired with crystals and tubes 17.95
 Shipping Weight 1-lb.



VFA-1 CASCODE PRE-AMPLIFIER

For 2 Meters and 6 Meters, using the 6BQ7A in a low noise circuit. Designed to mount in a standard 3" x 4" x 5" minibox.

PRICES

Kit, less tubes \$ 4.75
 Wired, with tubes 6.95
 Shipping Weight 1-lb.



IFA-10 AMPLIFIER

For use between converter and receiver. Uses 6AH6 type tube. Available for I-F ranges from broadcast band through 30 MC. Designed to mount in a standard 3" x 4" x 5" minibox. (Specify range when ordering).

Kit, less tube \$ 5.75
 Wired, with tube 8.50
 Shipping Weight 1-lb.

HOW TO ORDER

Furnish name (or names) and address of those to receive gifts. Send your Gift Card for each Gift Wrapped unit; state shipping time desired.

Add sufficient postage and insurance (for applicable Parcel Post Zone) to check or money order for each printed circuit unit ordered.

Shipping Weight Each Unit 1-Lb.

Zone	Postage
1 x 2 (to 150 miles)	.27
3 (150-300 miles)	.29
4 (300-600 miles)	.31
5 (600-1000 miles)	.36
6 (1000-1400 miles)	.40
7 (1400-1800 miles)	.46
8 (Over 1800 miles)	.51

Insurance—Add 10c for \$10.00; 15c for \$25.00 Value.

Write for COMPLETE CATALOG

International
 CRYSTAL MFG. CO., INC.

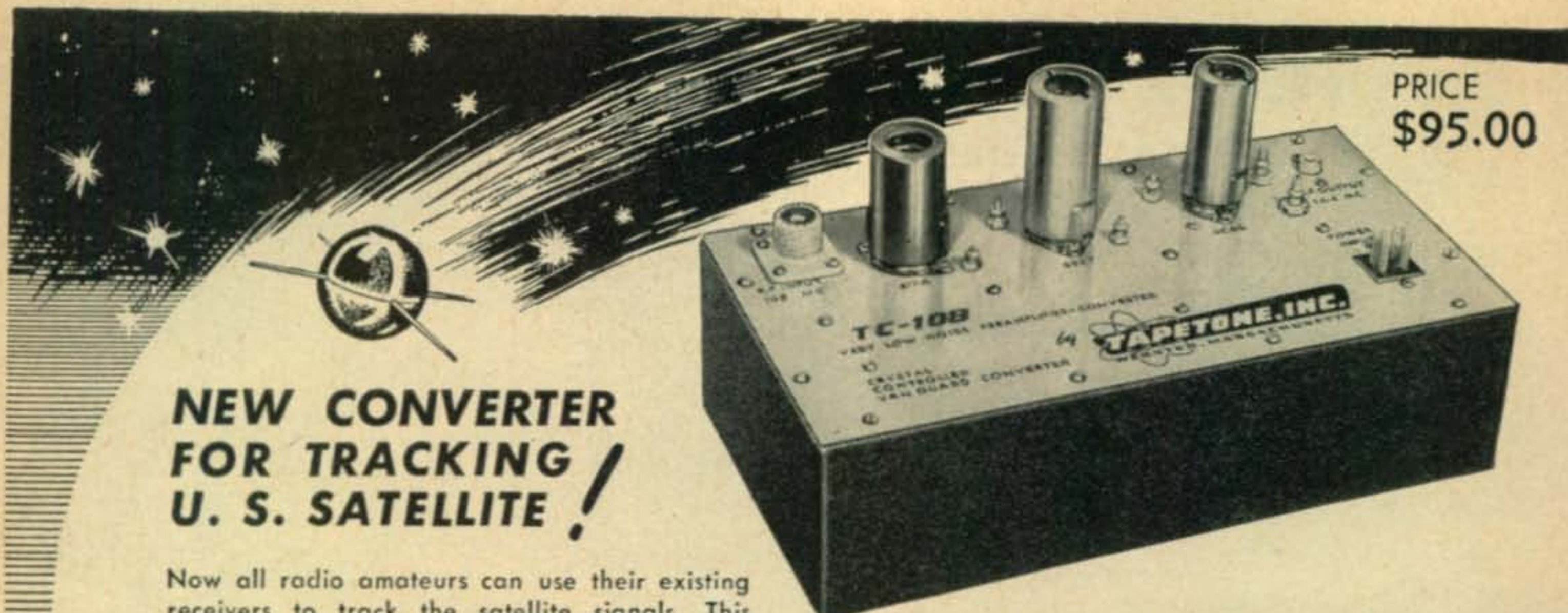
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OKLAHOMA CITY

For further information, check number 18 on page 124.

December, 1957 • CQ • 23



PRICE
\$95.00

NEW CONVERTER FOR TRACKING U. S. SATELLITE!

Now all radio amateurs can use their existing receivers to track the satellite signals. This newest TC-108 converts the 108.000 mc satellite transmission to 14.4 mc standard output.

VANGUARD, TC-108

- Power Gain: 2000 (33 db).
- Noise Figure: 2.1 db.
- Rejection of Signals at Intermediate Frequency: 90 db.
- Image Frequency Rejection: 65 db.
- Intermediate Frequency output: 14.4 mc.
- Rejection of all other Spurious Responses: greater than 65 db down.
- Matched Input Impedance: 50 ohms.
- Output Impedance: 50 ohms nominal.
- Output Bandwidth: 300 kc at 1/2 power points.
- Tube Complement: 417A/5842, 6BQ7A/6BZ7, 6CB6, and 12AT7.
- Power Requirements: (a) 6.3 volts at 1.3 amperes. (b) + 150 volts DC at 60 ma. regulated.
- Dimensions: 9 1/2" x 5" x 2 1/2" shielded base. Maximum seated tube and tube shield height 2 1/4".

Write for free TAPETONE instruction booklet on how to assemble equipment for tracking U. S. Satellite.

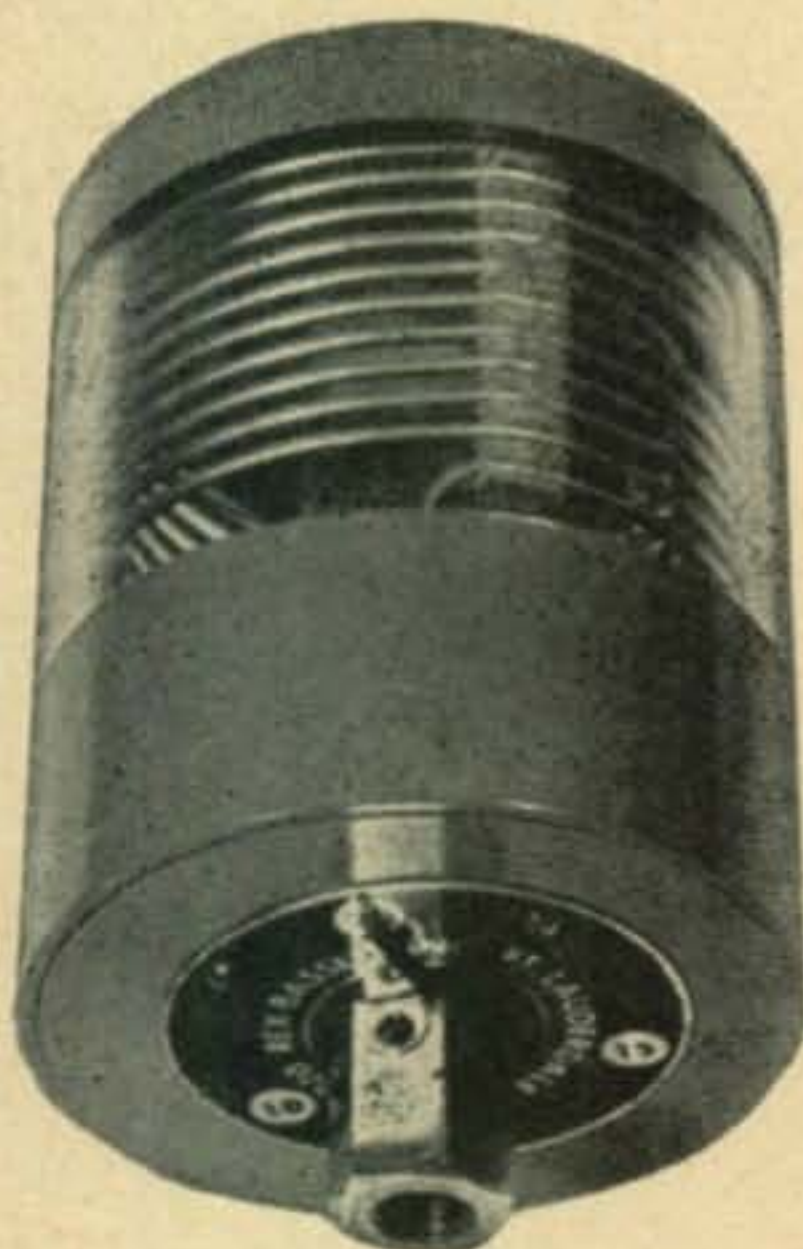
New Regulated Power Supply
Model PSR-150 available . . price 49.95

TAPETONE, INC.
10 ARDLOCK PLACE, WEBSTER, MASS.

For further information, check number 61 on page 124.

NEW!

BASSETT 3 BAND VACUUM COIL



For Use With The New KWM-1 Mobile

- Model VC-1020 covers 10, 15, and 20 meter bands.
- Efficiency comparable with individual coils.
- Hermetically sealed and filled with pure helium.
- Band selection by rotating coil—120°.
- Impervious to rain, dirt, and effects of weather.
- Extremely high "Q" and handles 1 KW SSB easily.
- No switches, sliders, in coil to destroy "Q".
- Fits standard 3/8-24 rods, 36" base rod, 60" top rod.
- Factory engineered for resonance. No adjusting necessary.
- The only weather sealed high efficiency coil.
- Unconditionally guaranteed.

See your Distributor or write for brochure and pricing information on the BASSETT All Band Model VC-1075 Vacuum Coil, and other mobile accessories.

Model VC-1020—\$26.50 Amateur Net

REX BASSETT, INC.

BASSETT BUILDING

FORT LAUDERDALE, FLORIDA

For further information, check number 19 on page 124.

Quality Built 2 & 6 METER CONVERTERS

XC-144

Two Meter grounded grid 417A Crystal Controlled Converter. 2.8 db Noise figure, 33 db Power gain, 60 db Image rejection, 80 db I.F. rejection and 80 db down on all other spurious responses. XC-144 output 14 to 18 mc. Other models — XC-144-C output 26 to 30 mc, and XC-144-N output 30 to 34 mc. Price \$84.95

Special DOUBLE CRYSTAL Converters Available for COLLINS 75A4 receiver
XC-144-C4 \$89.95 XC-50-C4 \$69.95

New Regulated Power Supply
Model PSR-150 available . . price 49.95



- UNIFORM RESPONSE
- LOW NOISE FACTOR
- HIGH OFF-BEAM SIGNAL REJECTION
- TOP NOTCH RECEPTION

XC-50 — Six Meter Double Cascode Crystal Controlled Converter. 4 db Noise figure, 33 db Power gain, 90 db Image rejection, 80 db I.F. rejection and 80 db down on all other spurious responses. XC-50 output 14 to 18 mc. Other models — XC-51 output 10 to 14 mc, XC-50-C output 26 to 30 mc, and XC-50-N output 30 to 34 mc. Price \$64.95

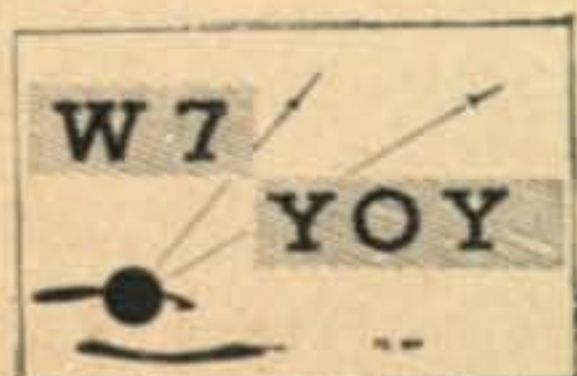
Ask your dealer or write to **TAPETONE, INC.**
10 ARDLOCK PLACE, WEBSTER, MASS.

For further information, check number 62 on page 124.

QSL Contest

Every month we sit down and separate the wheat from the chaff . . . and print the chaff. The QSL Contest goes on, month after month, with the grande prix being a two year supply of CQ's. Runners up get to hate the winner.

WINNER



RUNNERS

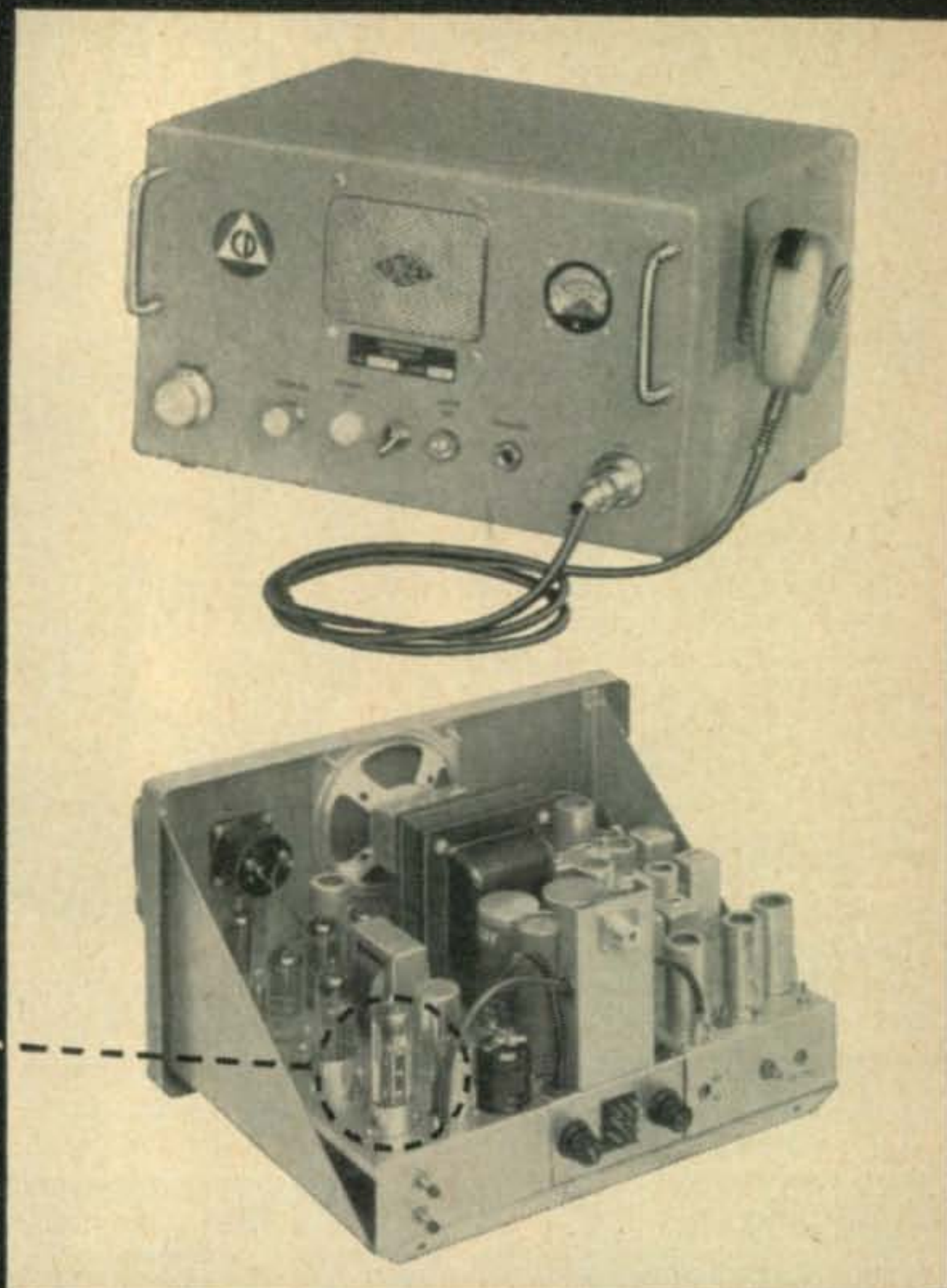
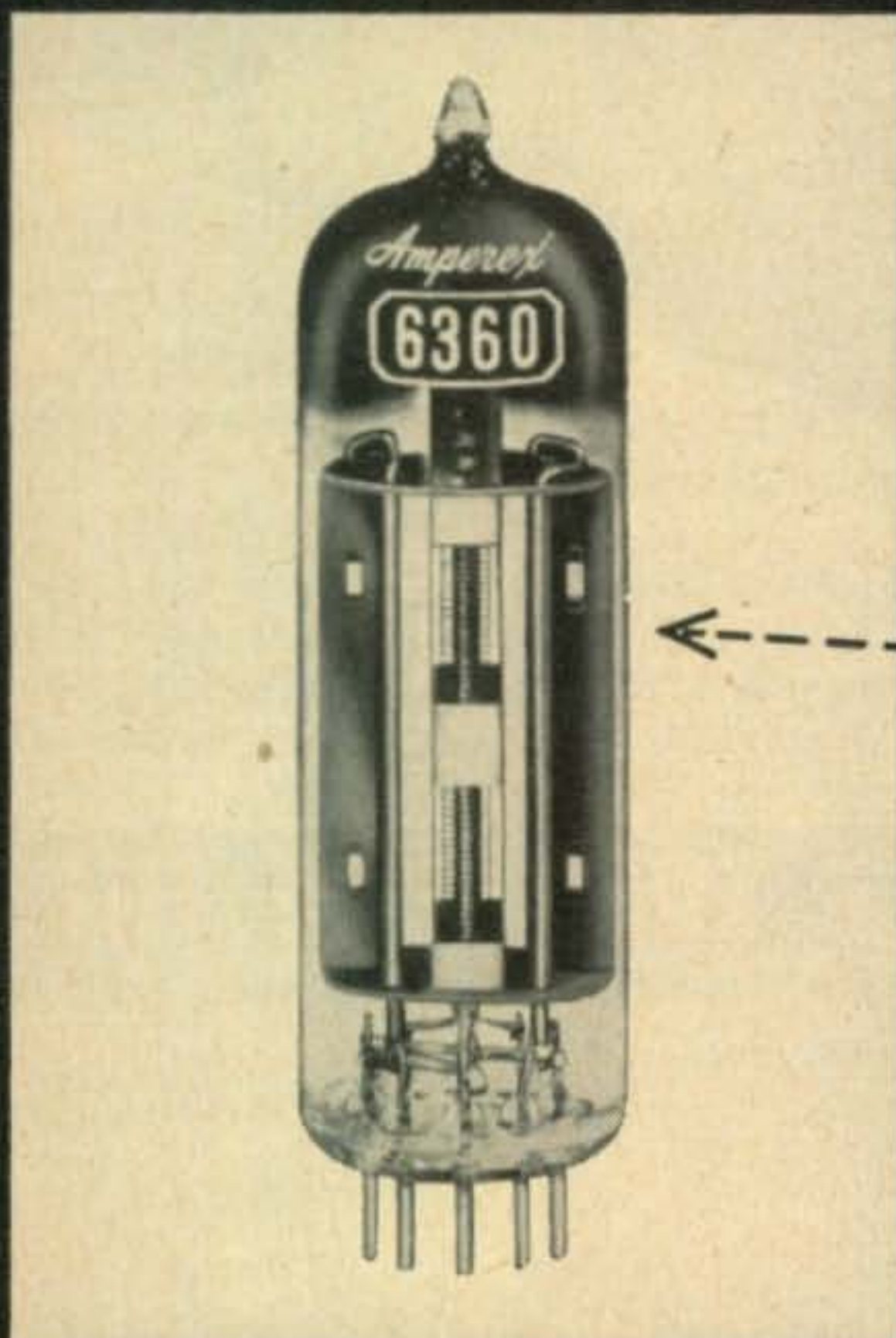


UP



CIRCUIT BY GONSET

New 25-250 Mc
fixed-frequency Communicator
made by GONSET, Burbank, Calif.



AMPEREX Type 6360
twin tetrode

POWER BY **Amperex**®

Signal clarity, strength and stability — these are the features GONSET wanted in their new fixed-frequency Civil Defense Communicator; and these are the reasons that made them select the AMPEREX 6360 to power its final. See and hear the lightweight, ready-to-operate Communicator at your dealer. It is guaranteed to meet all Civil Defense specifications for

fixed and mobile AM receivers and transmitters above 25 megacycles.

As the heart of the Communicator's final amplifier, the AMPEREX 6360 twin-tetrode offers high efficiency in a miniature 3" x 7/8" envelope, making it an ideal choice for power amplifier and frequency multiplier applications at low cost. Net price to user is \$4.00.



*ask **Amperex***

about tubes for communication applications

AMPEREX ELECTRONIC CORP., 230 Duffy Avenue, Hicksville, L. I., N. Y.
In Canada: Rogers Electronic Tubes & Components, 11-19 Brentcliffe Road, Leaside, Toronto 17, Ont.

We can't hold back any longer!

WE HAVE BEEN DELUGED WITH REQUESTS FOR INFORMATION ON THE NEW 100V, SO WE ARE RELEASING THE FOLLOWING DATA IN SELF DEFENSE—AHEAD OF SCHEDULE.

Central Electronics....



....Proudly Presents

The NEW MULTIPHASE MODEL 100V Exciter-Transmitter

RF OUTPUT: 100 watts average before grid current on all bands using a pair of ultra-linear 6550 tubes in final. Separate **POWER OUTPUT CONTROL** continuously adjustable down to 10 watts. Drive any linear or use it "barefoot".

FREQ. RANGE: 80, 40, 20, 15 and 10 meters with spare position on bandswitch for 160 meters or other frequencies such as Mars, CAP, commercial, etc.

PRECISION LINEAR VFO BUILT IN: Direct reading 1 KC calibration all bands. Separate .1 MC slide rule dial and KC window. Two speed tuning knob turns precision leadscrew in new Patent Pending permeability tuned two tube oscillator circuit. Fast tuning 100KC per turn; Slo tuning 750 CYCLES per turn!

NO TUNING CONTROLS (other than VFO): Broadband circuits throughout, as introduced in our 600L Broadband Linear. Separate crystal controlled mixers.

NINE POSITION EMISSION SELECTOR: Lower sideband, upper sideband, double sideband, all with suppressed carrier; lower, upper or double sideband (AM) with preset carrier; Phase Modulation (PM), CW and FSK with preset carrier. FSK frequency deviation adjustable.

ONLY FOUR OPERATING CONTROLS PLUS VFO ON FRONT PANEL: Seldom used "set and forget" controls on front panel behind magnetic doors.

METER READS: Watts input 0 - 200, RF amps output and suppressed carrier level. Has input marked at 100 watts for AM and 170 watts for CW, PM and FSK.

2" RF ANALYZER SCOPE BUILT IN: Monitors RF output wave to show flat topping and prevent TVI.

CALIBRATE LEVEL CONTROL: Choice of either voice or carrier for calibrating signal.

ADVANCED PHASING GENERATOR: With inverse feedback and new PS-2 network. Sideband suppression with new network in excess of 50 db. Built-in audio filter. Narrow signal, plus naturalness, coupled with long term stability are features of new generator.

SIZE AND STYLING: Equal to 600L **PRICE:** \$595.00

PLACE YOUR ORDER NOW—THE BACKLOG IS INCREASING DAILY.
WE ARE ALMOST READY FOR PRODUCTION.

MULTIPHASE
EQUIPMENT

Central Electronics, Inc.

1247 W. Belmont Ave.

Chicago 13, Illinois

MULTIPHASE
THE OVERWHELMING
CHOICE OF HAMS
EVERYWHERE

For further information, check number 20 on page 124.

← For further information, check number 26 on page 124.

December, 1957 • CQ • 27

When Lt Colonel Lloyd D. Colvin, W6KG, obtained his 301 confirmations for WPX he immediately took an airplane ride (non-stop) from San Francisco, California to New York City and hand-carried his proof of WPX to the editor of CQ. This will give you some idea of the enthusiasm with which W6KG tackled the job of winning WPX number one. After hearing his story we asked him to write this account of "how he did it".

WPX NO. 1

Lloyd D. Colvin, W6KG

Lt Colonel, Signal Corps, U. S. Army
P. O. Box 30

Alameda, California

(ex W6TG, FA8JD, W6ANS, KL7KG, W6IPF, J2AHI,
W6KFD, K2CC, JA2KG, W2USA, K4WAB, J2USA, W7YA,
W6AHI, W7KG, JA2US, W4KE, DL4ZC)

Most contest winners have gone through many sessions of seeing someone else beat them out before they finally perfect their equipment and operating techniques to the point that they finally come through a winner. The winning of WPX No. 1 is not an exception in this respect.

When the rules for WAZ were first announced, I was J2AHI in Japan with a KW, all-band station. I started out to win the first WAZ and had worked all zones some time before the first award was issued. I had 39 zones confirmed when WAZ No. 1 was issued. My missing zone was No 23. My three letters to AC4YN had not been able to convince him of the necessity of a prompt QSL (took one year to receive it). On the basis of my WAZ experience I realized that winning a similar first award requires:

- a. A good station with well designed equipment and antennas, permitting operation on all DX bands.
- b. Good operating ability.
- c. Some special way of getting confirmations (QSL's) in a hurry from the stations worked.

When the WPX rules were announced in the January 1957 CQ, I decided to try to win one of the first awards. I had a slight advantage over some stations in that my call was brand new and I was not faced with the problem of working any station a second time or obtaining his card a second time for WPX. All stations I worked would be original contacts. I had a good KW transmitter, a receiver with good sensitivity and selectivity and one of the new trap type, tri-band, rotary beam antennas. I realized that if I were to compete successfully

with other stations in a similar position I must concentrate on a method of obtaining confirmations faster than they did.

The special QSL policy I used was as follows:

- a. I sent my regular QSL promptly direct to each new prefix as worked.
- b. I continued to work and QSL direct as many stations of each prefix as possible until that prefix was confirmed.
- c. When conditions permitted I explained to each station worked why I wanted his card and asked for direct QSL.
- d. If the stations did not QSL in 2 months time I sent a second QSL card. In some cases I included a letter with this second QSL card.
- e. If the second QSL was not answered I then sent my special International Reply-Paid Post Card.
- f. I sent commercial cablegrams asking for QSL to a few of the last needed stations (very effective—but expensive).

My initial experience with the use of International Reply-Paid Post Cards was discouraging. These cards cost 8¢. Any US post office can obtain them for you. It is a double card. You print your QSL on one section and on the other section you print (a stamp can be used if desired—or even made by hand) a QSL from the foreign amateur to you. I found very few US post offices have the cards in stock. A great number of US postal employees are unfamiliar with the rules and regulations pertaining to the use of the cards. The percentage of postal employees in foreign countries who are unfamiliar with these cards is even higher than in this country. I found that many foreign amateurs were unable to convince their postal personnel that the reply card could be sent back to me without any local postage stamps affixed to the card. I reported this, and some other problems, to the office of the Postmaster General in Washington, D. C.

[Continued on page 114]



AJD

W6KG

WAZ

W1

SP2GS

0ZGHS

VR3B

SP7HX

KA20JH

TF3AB

CE4AD

0290L

100010

OE3NP

1012

Souping the Super-Pro

Leonard E. Geisler, AES,

Chief Engineer,
Japan Electronic Trading Co.
CPO Box 1556, Tokyo, Japan

Dust off that surplus Hammarlund "Super-Pro!" Recently there has been a rash of articles concerning the advantages of grounded-grid amplifier conversions for ailing and noisy communications receivers. Inasmuch as these articles, while done in excellent form, do not cover the hot-rodding of the entire receiver, I'd like to attempt to correct this lack by releasing formerly "classified" data used by our firm in routine overhaul of surplus "Super-Pro's" (BC-794, 779, 1004, R-129/U's, etc). I hope that those readers who do this all-or-nothing revamp job appreciate the fact that we charge our customers the small fee of \$80.00 for the same work done in our factory, with guarantee, of course! (We retail these converted sets for around \$120.00.) Note also that this is not a learned discussion of grounded grids vs. pentodes, etc., this is **PRACTICAL!**

Although the method I'm outlining here seems like a king-size job, be of good cheer! You can do the job in about 12 man-hours if you're an average solder-slinger, only a little longer if you're out of practice or a duffer. The only *unusual* tools you'll need—if you're of a mind to do a really professional job, are a TV Alignment Generator, an Oscilloscope and a "Microvolter" for noise and gain measurements. You can't align the Xtal filter without the TV Generator and the 'scope.

Before hotting up the side cutters *read this article all the way through*, then, lay in a good supply of 0.05 mfd and 0.01 mfd oil-filled bypass capacitors (about a dozen of each), a half-dozen of 1.5 k Ω , 1/2 watt carbon resistors, a 350 Ω , 2 watt, a couple of 500 k Ω , 1/2 watt's, a 120k Ω ditto and a couple 0.001 mfd 600 volt mica's. You'll need some rubber grommets for stuffing into 1/4" holes, say 6, some 6 feet of high-class hookup wire and some tubes. Get 4 each 6SL7's, 1 each 6AC7 and 6SG7 (yes, no miniature tubes!).

Flex those biceps and lay the set on its back

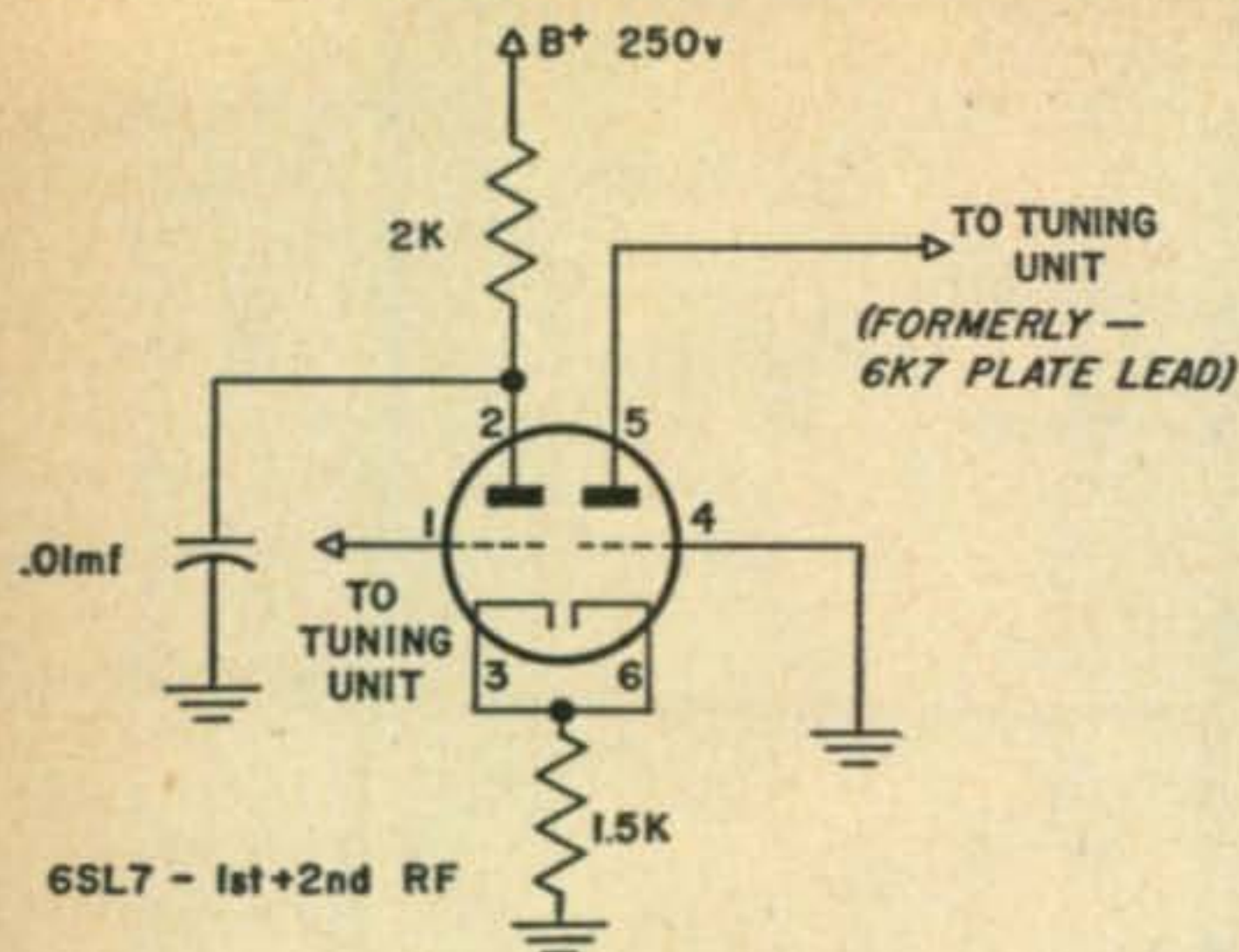


Fig. 1

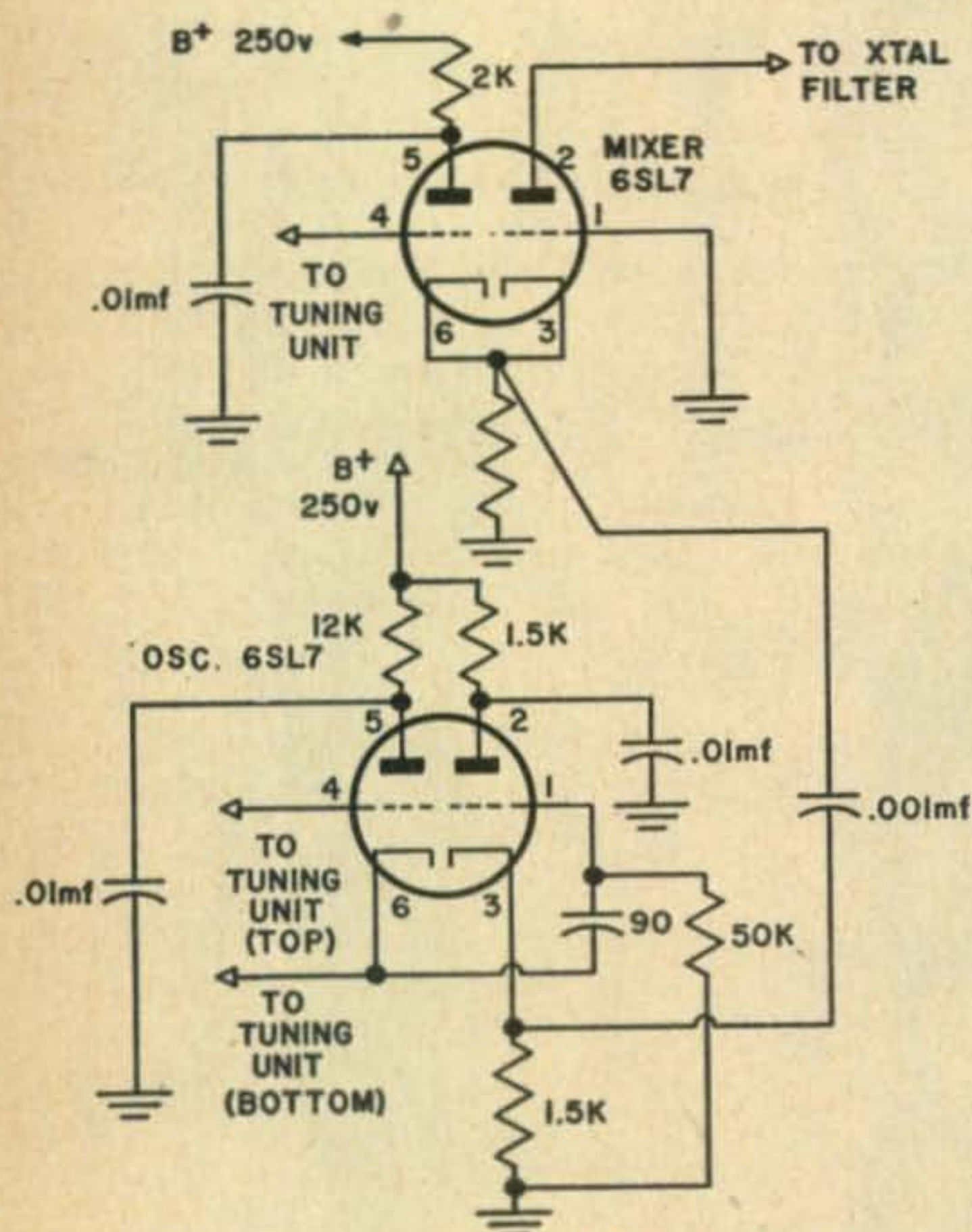


Fig. 2

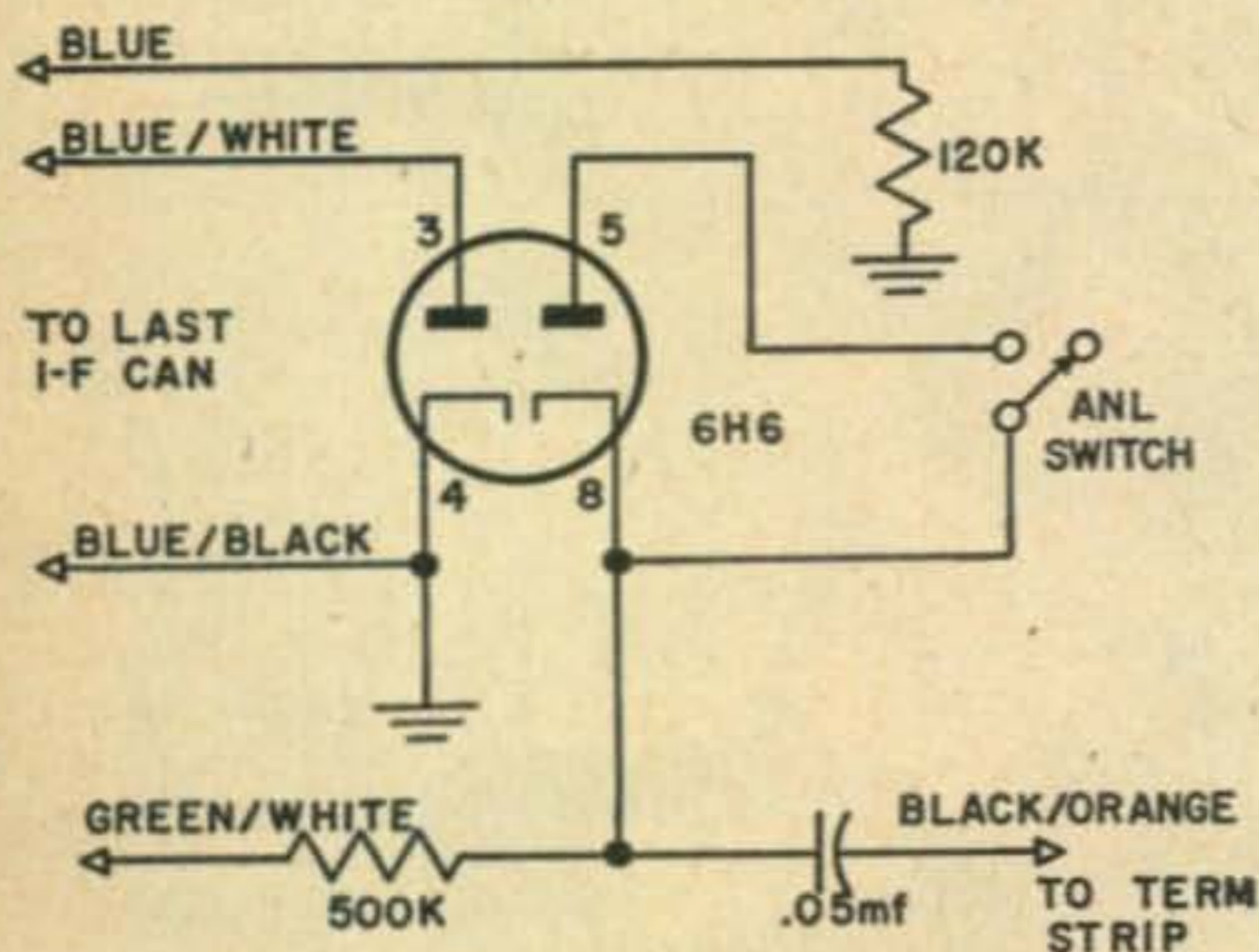


Fig. 3

after removing the 6N7, the two rf 6K7's, the 6L7 noise gen—oops, sorry, I meant mixer! Also delete the 6J7 oscillator, the last i.f. 6SK7 and the 6SK7 avc amplifier.

Throw away that 6L7 boy! Also discard the 6N7. Place the other bottles on the shelf for spares (if they're any good). Insert the 6AC7 in place of the last i.f. 6SK7, ditto the 6SG7 in place of the other 6SK7 in the avc amp socket.

Now, ready to go to work? Will properly made out and signed? OK, prop this copy of "CQ" where you can see it clearly and get with it!

Remove all components from the two rf tube sockets, the mixer and oscillator sockets. Careful, don't cut those tuner plate leads short! Keep the 50 k Ω mixer grid resistor and the 90 mmfd osc-mixer coupling capacitor. Keep also 2 k Ω screen decoupling resistors from the 6K7 sockets.

Prick-punch and drill a 1/4" hole through chassis near pin 1 of both the rf tube sockets. Deburr the holes and install rubber grommets. Do likewise the alongside pin 4 of both the mixer and oscillator tube sockets. Refer to the schematic and wire up the four stages. *Do not* connect the grid leads marked "To Tuning Unit" at this time—the set's too heavy to flop over easily! Where decoupling capacitors are shown, use the fresh oil-filled units you just shelled out that hard cash for. After all, the last of the BC type Super Pro's came off the production line about 10 years ago and something's bound to give!

Comes now the confusing part of the job. Go slow and refer to the figure before making the following changes since you might possibly go astray. You'll notice that the 6H6 avc diode has a three volt external bias applied through the bias bleeder on Strip E-24. Now, referring to the figure, remove the 2 bias lines from terminal 9 of the strip. Swing these two lines over to any handy grounding lug and solder. Remove the 0.05 mfd bypass capacitor from this same terminal and install a fresh one. While you're still at this spot, remove the avc feed lines for the 1st rf stage and the mixer bias return line from their respective terminals and ground also. This last step operates the 1st rf and the mixer self-biased and "wide-open." Don't worry, it works!

Remove the 0.02 mfd capacitor from term. 1 of E-24 and pin 5 of the 6J5 1st af tube socket. Replace with a piece of hookup wire. Remove the 500 k Ω grid resistor while you're at it and open the ground lead going to pin 8 of the 6J5 and insert a new 1.5 k Ω resistor. Now remove the 750 Ω 6F6 output stage cathode resistor and replace with the new 350 Ω , 2 watt resistor. Clip out the jumpers connecting the screens and plates (triode connected) of the output 6F6's. Lay in a new line from these two screens to term. 4 of Strip E-23. You have just gained 10 watts of audio!

Now we really go ape! Sneak up on the 6N7

socket and—REMOVE ALL WIRING! (This following change was suggested by a Hammarlund engineer in "QST" and has been modified by this writer to a more workable arrangement.) Be careful not to cut short the leads coming out of the last i.f. can. Remove all components from the 6H6 2nd detector socket and from terminal strip E-21. Do not remove the black/orange audio line on pin four of the terminal strip. Do not remove the heater lines from term. 1 either. Remove all jumpers from pins 3-5 and 4-8 on the 6H6 socket. Proceed to rewire the 6H6 socket according to the diagram. Your good sense will dictate the parts layout. When this wiring is done you'll have an excellent series type ANL.

Hang on, there's still more!

Locate the wire that runs from terminal 1 of R-41 to term. 1 of Strip E-20. Unsolder this wire from R-41 and splice to length of wire long enough to reach and connect to terminal strip E-24, term. 9. Now solder in a 1.5 k Ω resistor from Strip E-20, term. 3 to any handy ground point.

Now, if you're still with me, raise the set onto (grunt!) it's right side. Remove the now unnecessary grid clips from the tuning unit grid lines and splice on some leads long enough to go the distance to the previously unwired grid pins of the rf, mixer and oscillator stages. Dress these leads well away from the chassis and side of tuning unit, allowing just enough slack to clear the 6SL7's when they're inserted in their sockets.

REVERSE the leads to the S meter! Remember the reverse English you removed from the avc diode?

Now c-a-r-e-f-u-l-l-y remove the can from the last i.f. xfmr. Remove the 100 k Ω resistor you find on the terminal board within. Replace with a 500 k Ω resistor. Replace all the paper bypass condensers with fresh oil-filled ones. Put a piece of heavy waxed paper inside the i.f. can to prevent shorts and reassemble. Do be careful now!

Next, carefully and tenderly perform the same condenser replacement operation on the avc i.f. can assembly, meanwhile being most careful to prevent shorts from occurring.

(Want to really do it up brown? Replace all the bypasses inside the Tuning Unit by removing the whole thing from the chassis and taking off the side and bottom plates . . . if you feel like a 100% overhaul job. Of course, you could do the job by fishing out and around a few coils but the dangers here are rife. I don't recommend that method.)

There is one more avc bypass capacitor which deserves replacement. Remove the side plate (first take off the panel bracket) of the xtal Filter and remove and replace the capacitor that you see. Leave this side plate off if you intend to sweep align the filter as you have access to the phasing control trimmer.

Now, while you still have the set on its

side, make a thorough check of your wiring seeing that it agrees with the schematic. You might also sweep out all the trash left over from your rewiring efforts.

Occasionally, after completely refurbishing your Super-Pro you will find the noise level has *gone up* rather than decreasing. This is due to very high leakage in the old wiring harness. The only cure is to strip out the old harness carefully and make up an entirely new one and rewire it into the set. We suggest you replace the harness on any set which is 3 or 4 digit serially numbered, just on general principals.

Everything in order, you hope? OK, fire it up, you're FINISHED!

If you made a noise measurement before you started this clambake, make the same kind of check again and compare your readings. You should have 50 to 80% *less* internal set noise! You might say noise is conspicuous by its absence.

You probably are not lucky enough to have an instruction book so follow these "condensed" alignment instructions. *Omit the Xtal Filter alignment if you don't have access to a FM or TV alignment generator and oscilloscope.* It won't make too much difference in the filter operation I hope.

Super Pro Alignment Instructions — IF and RF

1. Connect hot lead of Signal Generator to grid (pin 4) of mixer through 0.001 mfd capacitor. This prevents excessive loading of the mixer. Ground the other lead.

2. Set bandspread dial to 100, main dial to 2.5 mc, Xtal Filter switch to 3, avc on, and off (this switch is now reversed), bfo off, Sensitivity maximum, Bandwidth to 3.

3. Tune signal generator slowly through the resonant peak of the Xtal Filter, 465 kc. You should find one point where the S meter really whops over. That should be it. However, the set may have been misaligned at some time. Advance the gain control and listen for the "ring" of the crystal and tune the Signal Generator for maximum S reading at the crystal "ringing" point. Back off the generator output to keep from wrapping the S meter pointer!

4. Switch filter out, peak *last* i.f. for maximum volume, then work forward, peaking all the other i.f.'s by S meter. If you have no FM or TV generator don't touch the top slug on the Xtal Filter box! Peak up only the bottom slug. You should also peak up the avc Amplifier trimmer. You'll get a drop in volume as you increase the resonance of this stage. Don't worry, this is a normal indication that the stage is operating properly.

5. Now set the bfo control knob so that shaft coupling set-screws face upwards or away from the chassis. Loosen the knob's set-screw and readjust pointer to coincide if it now doesn't. Turn off Signal Generator modulation,

zero-beat the bfo by ear—naturally you'll have to lay the set down to get at the trimmer.

6. Remove the AM Signal Generator and connect your FM or TV Alignment Generator to the antenna terminals. Connect the oscilloscope to the phono terminals on rear of set to obtain sweep frequency display. (Omit #6-7-8 if you have no TV generator.)

7. Tune Alignment Generator and receiver to mutually compatible frequency and switch in the Xtal Filter to "1." You should be able to observe the Xtal notch move about on the display if the filter has been aligned previously. If not, tune the top slug—formerly untouched—until the selectivity peak rises and another appears. You may have to give a gentle nudge to the trimmer on the phasing control, with the control set at "O" and readjust the slug for maximum gain. A properly peaked Xtal Filter will show a pronounced peak and null when the filter switch is set to step 5 and the phasing control is rotated.

8. You might check the bandpass of your set by cutting out the filter and rotating the bandwidth knob to 16. A fairly symmetrical curve should show if you've done the job right. Anyhow, this completes the i.f. alignment.

RF and Oscillator Alignment

1. Remove the TV generator and connect the AM signal generator to the antenna posts. A 50 or 100 Ω resistor in series with the hot lead will aid in obtaining oscillator harmonics.

2. Connect a short antenna to the ungrounded antenna terminal and tune set to pick up WWV's 15 or 10 mc signal. Tune Signal Generator to 2.5 mc and zerobeat the harmonic output with WWV. Leave the Signal Generator there and disconnect the pickup antenna. Switch on the Signal Generator modulation.

3. Tune receiver to 2.5 mc—leave the bandspread dial at 100—and peak up the appropriate slugs in the bottom of the tuning unit. Start with the oscillator and work to the rear of the set. Observe S-meter for maximum peak.

4. Swing the main tuning over to 5 mc and adjust the trimmers, starting with the oscillator, to maximum.

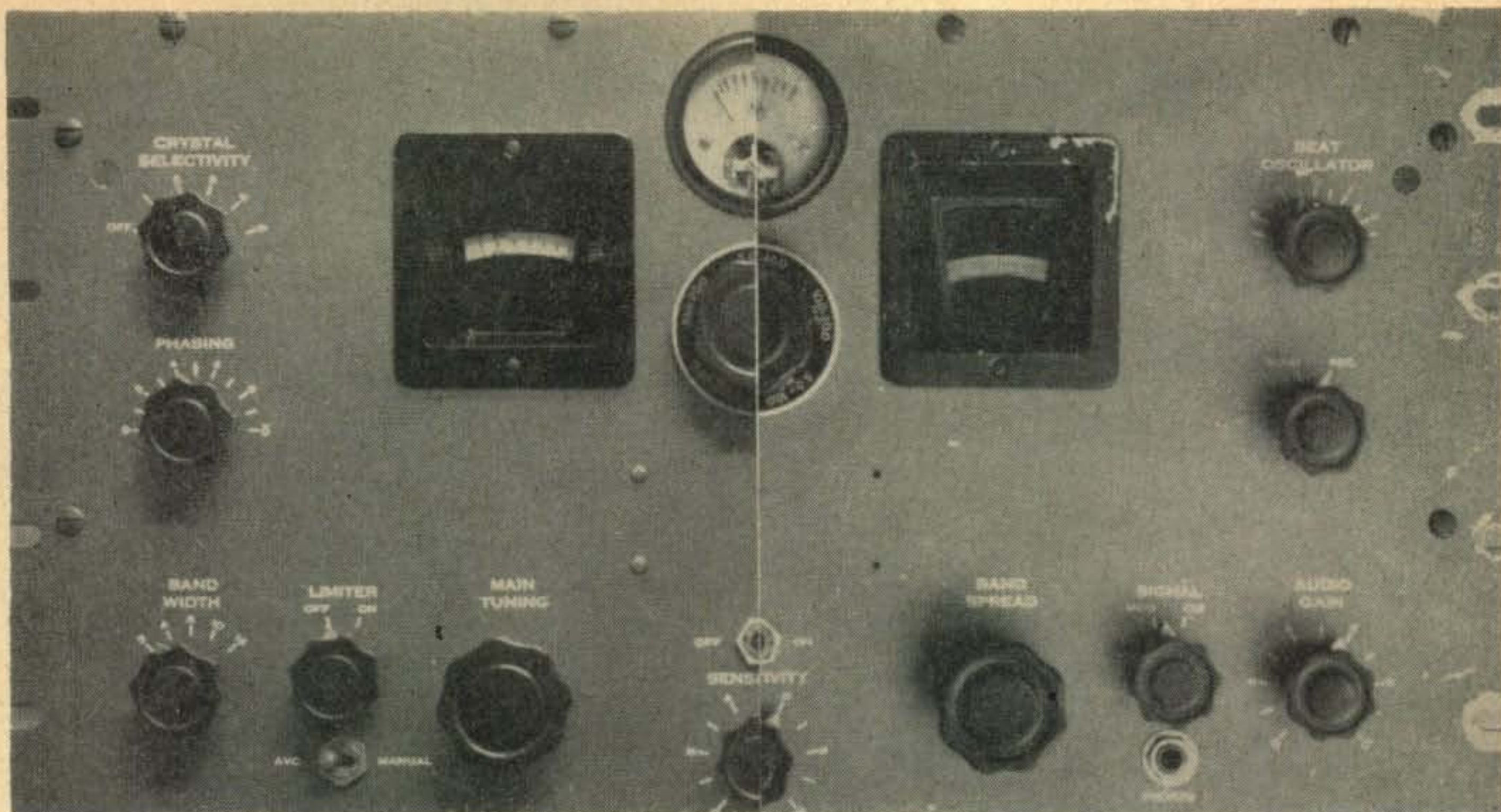
5. Return to 2.5 mc and repeat the tuning with the slugs. Go back to 5 mc and peak up the trimmers again. Keep this up—two or three times—until you've wrung out all she'll give. Keep the Signal Generator output as low as possible and still get a reading of S-2 or 3.

6. Repeat this routine on the remaining bands. For details on tuning up the low frequency bands, well, do you listen much below 1.5 mc?

This completes the alignment. I suggest you rotate R-41 gently fully clockwise to "zero" the S meter.

If you have ever aligned your set before, you'll have noticed an unusual characteristic

[Continued on page 104]



The Super-Pro before and after its "face-lifting".

If You Can't Move It, Paint It!

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If you take any interest in the physical appearance of your equipment, this article might be of interest to you. Judging from the appearance of two receivers I bought second-hand, everyone isn't interested. One, a war casualty Super Pro, and the other, an HRO-50, were both scratched rather badly. The receivers both worked well and were not much out of place in the shack out back, but when my mother W7SBX recently moved to a new home the ham gear was integrated into a desk-bookshelf arrangement in the living room. In this prominent spot appearance became a prime consideration.

As replacement was out of the question the solution appeared to be a new paint job. But, both sets had controls which were identified by markings either stamped or engraved into the panels and filled with white paint. Painting seemed to be merely a matter of smoothing out the rough spots on the surface and how was I to paint the panel and yet not cover these stamped control identifications? The thing began to look as though it wasn't a "do it yourself" project. Professional help seemed necessary. A short talk with the painter at an auto paint shop yielded the following solution.

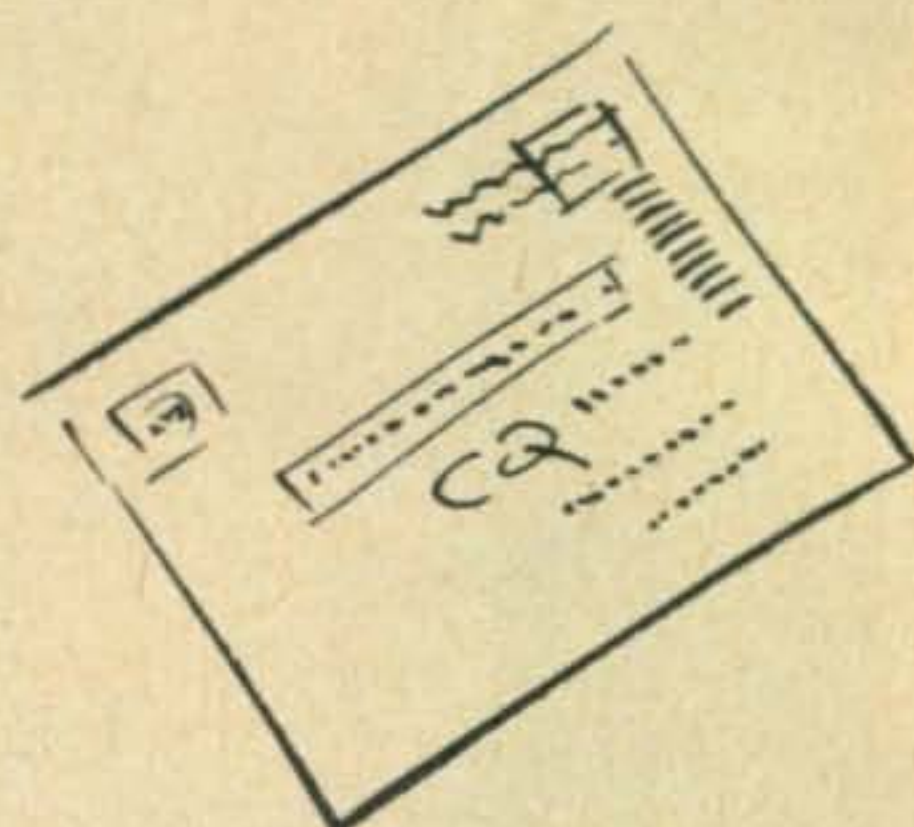
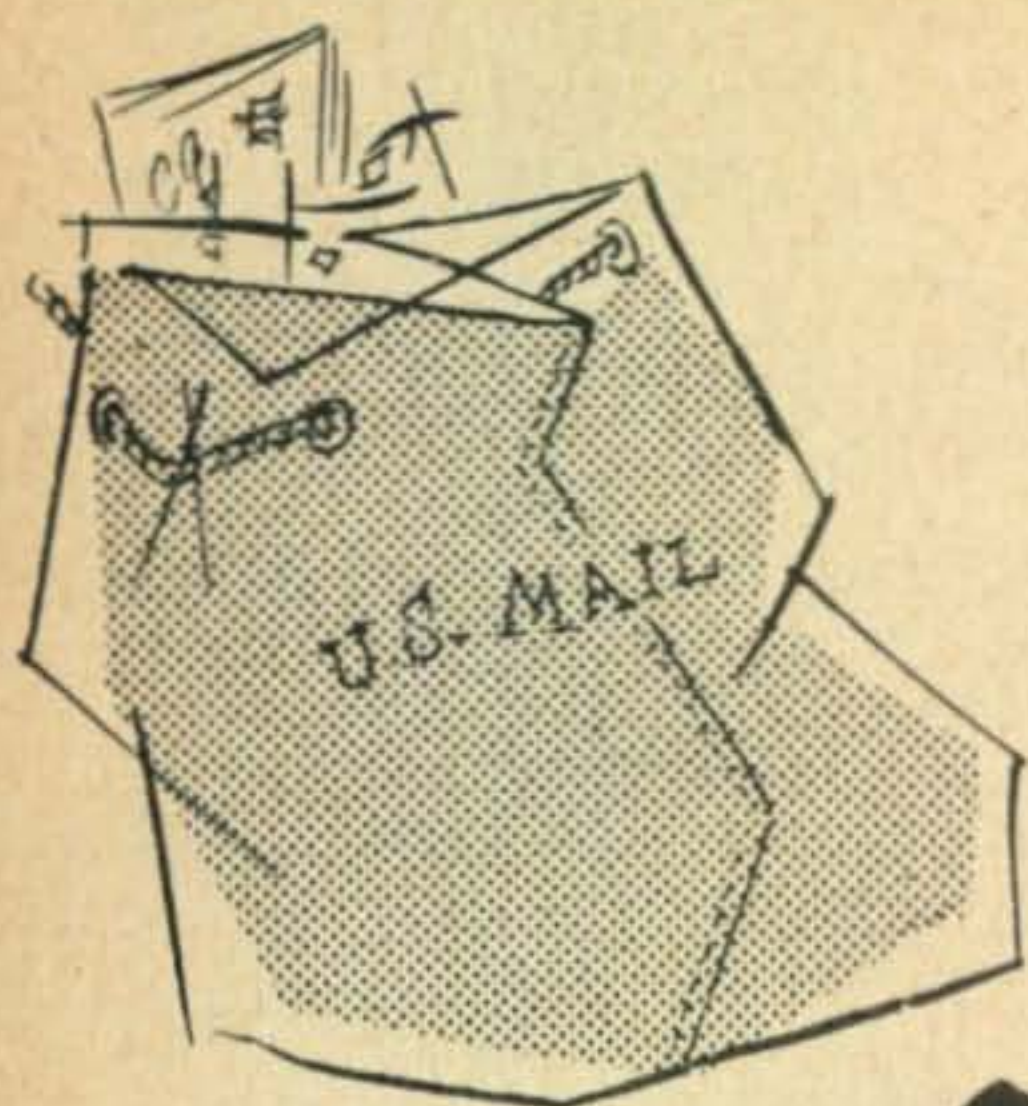
The painter said he would do the job in spare time and suggested that it be done with lacquer. Lacquer could be mixed to match any color equipment, would dry fast, and most important, wouldn't fill the panel markings.

That evening I scratched the old paint out of the panel markings on the HRO with an ice pick, being careful to keep the pick perpendicular to the panel to lessen the chance of it slipping and scratching the panel. The next morning I removed the panel and cabinet and sanded out the rough spots in the HRO cabinet. The Super Pro panel was too scratched to waste time sanding the many scratches, so I cleaned it completely with paint remover.

For those painting the front panel themselves, make sure and cover the exposed knobs or shafts and dial faces with masking tape.

The panel and cabinet were taken to the paint shop about noon. By five the same day they had been sprayed with primer, four coats of gray lacquer, two coats of clear lacquer, and they were dry and ready to be remarked. Marking was a simple process of setting the cabinet face up, to prevent running, and daubing white liquid shoe polish on the areas of the control

[Continued on page 104]



CQ's Survey....

Wayne Green, Editor

The recent CQ survey brought out a lot of interesting data. Perhaps you'd like to see some of our results. The sampling was of over 10% of our readers and thus represents a high degree of statistical accuracy. The results of this survey are at variance in some parts with those made by other magazines, but this variance is to be expected since CQ magazine appeals to the more active amateurs. The cross-section was as follows

W1	5.6%	W6	13.6%	VE	1.7%
W2	11.8%	W7	6.3%	DX	1.1%
W3	6.8%	W8	9.4%	Not Lic.	5.1%
W4	10.3%	W9	9.5%		
W5	9.9%	W0	8.9%		

Only the data sent in by licensed U.S. hams was used for the following statistics since we did not have a large enough sampling for an accurate statistical analysis of the Canadian, DX, and non-licensed groups.

The first question was age. The average age varied only slightly around the country and turned out to be 34½ years. The largest proportion of our ham readers are over 25 years old: 73% of 'em. 78% are 45 or younger. The average number of years licensed is 8½.

Then we asked about the field of work and were surprised to find that over 40% of our readers are working in electronics. The percentage varied from 40.4% to 40.6% in different parts of the country.

The next question was one of salary. We didn't expect many fellows to answer this one, but were surprised to find less than 0.1% left this blank. The average salary turned out to be \$7350, with the largest clusters in the \$5000 and \$6000 bracket. 20% earned \$5000

and 20% earned \$6000. 20% made over \$10,000. This was lower in the farm areas, being only 12% making over \$10,000.

The average ham shack, it seems, is worth a bit over \$1000. This estimate must be one of current worth, for most of us have spent a lot more than that on our hobby down through the years. Figuring things to be depreciated about 50% we can see that if we divide the worth of the ham shack by the number of years the average ham has been active we would come up with an expenditure of \$250 per year. When we asked for an estimate of what they expected to spend during the next year the average was quite close to that, being \$245. 20% expected to spend over \$500. This should put the amateur market into the \$35 to \$40 million dollar bracket next year. That's a right nice bracket and it might explain how come we have so many manufacturers interested in us.

We asked about test equipment. The average ham owns 4½ pieces of test equipment, with the popularity in this order: VOM, VTVM, GDO, Scope, Tube Checker, and Signal Generator. This all adds up to an average investment of close to \$200 per each of us. Lesse now, \$200 times 100,000 would put some \$20 million dollars worth of test equipment into the ham shacks, minimum. Test equipment manufacturers please note.

Phone VS CW

The figures in this section were not at all what we expected. Apparently ham operating has changed considerably in the last few years. We found that the percentage of CW-only stations has now dwindled to an average

of 5%, with the highest in any area being 6%. 20% claimed to be *only* on phone. We asked the question in percentages so we could get a pretty close estimate of just how much CW and how much phone there is. Taking the 75% operation as a dividing line we find that 30.6% operate CW 75% of the time or more and 52% operate phone 75% of the time or more. Splitting it down the middle we find that 62% operate phone most of the time and 38% operate CW most of the time.

This part also brought out that over 2% of the active hams were using RTTY, 10% were using SSB, and 27% were mobile! Only 1.3% were inactive.

CQ Departments

When we asked what you thought about the various departments in CQ we found that the percentages came out like this:

DX	66.8%	Scratchi	76.6%
VHF	61.8%	Letters	75.2%
SB	49.0%	QSL Con.	54.8%
RTTY	20.4%	Surplus	71.2%
Prop	77.0%	Puzzler	40.0%
YL	43.0%	Classified	68.4%
Novice	64.0%	New Prods	89.4%
Edit.	79.4%	Adver'tg	82.8%

Bless you for that high percentage on the Editorial.

Transmitters

We found that our readers owned transmitters as follows:

29.5%	Johnson
20.6%	Heath
8.9%	Collins
7.8%	Elmac
5.7%	WRL
5.4%	Gonset
4.8%	Harvey Wells
4.3%	Central
4.1%	B & W
1.7%	Hallicrafters
7.2%	26 other mfrs

Thus we can see that on a purely numerical basis two manufacturers have sold over 50% of the transmitters now in use. Recalculating this on a dollar basis gives different results, naturally. Here is what you get when you work it out that way:

Collins	30%	Gonset	5%
Johnson	27%	B & W	7%
Heath	11%	Misc.	20%

Collins goes up front by virtue of the much higher price per unit of their equipment. The Heath DX-100 turned out to be the single most used piece of equipment, with 12.9% of the commercial transmitter users reporting in as owners. Next came the Johnson Viking II with 10.2%, the Johnson Ranger with

7.3% and the Heath AT-1 with 5.9%. Turns out that some 83% of the active hams are using commercial transmitters.

Receivers

Here is the breakdown on receiver distribution:

Hallicrafters	33%
National	27%
Hammarlund	12%
Collins	10%
Surplus	10%
Miscellaneous	5%
RME	3%

On straight percentage basis we find that there are more Hammarlund HQ-129's in use than any other receiver: 5.1%. Next comes the Hallicrafters SX-71 with 4.3%, the Collins 75A4 with 4.2% and the National NC-300 with 4.0%, all pretty close together. In descending order after that are the S-40, BC348, SX-100, S-38, NC-98 and SX-96.

Well, there you have some of the things we learned from our survey, thought you might be interested. The hobby part was fascinating and we started, for a while, to keep track of the call letters of some of the fellows who were interested in certain hobbies where they might want to know who else was similarly interested. Unfortunately this grew to be such a whopping task that it had to be dropped. Like for instance KNØGVH, WØSCT and W50XR have horses as their hobby. WØQMG, WØYEY, KØAKR, W7CN, and W8JKK listed motorcycling. K2BUI, WØBMW, KN8BYB and W8EEQ are amateur magicians. With encouragement, as was mentioned in the editorial, we could turn over a page of CQ to a listing of hobbies and the fellows interested in them. For instance there is Antique cars, archery, astronomy, caving, CAP, chess, flying (gad what a large group that one is), guns, hi-fi, model planes, model RR, mountain climbing, minerology, scouting, skiing, skin diving, sports cars (another large group), travel, tropical fish, water skiing, and weight lifting. There were lots of hobbies where there might not so much interest in meeting other hams similarly interested such as golf, art, boating, sailing, stamps, bowling, woodworking, TV repair, athletics, etc. And plenty of rather obscure hobbies where only a very few fellows would possibly be interested: snakes, lapidary, prospecting, cryptanalysis, dancing, fly tying, geneology, geology, etc. If you want it, we'll get out some of our microscopic type and set up a hobby department page. Note that photography wasn't mentioned: 33% of us are interested in that, so there is no point in listing it.

The primary purpose of the survey was to help us make CQ what you desire it to be. Our thanks to all of you who took the trouble to send in the survey cards. ■

the "VW Special"

Lt. Col. Charles J. Schauers, W6QLV

Chief, Communications Engineering Division
Signal Section
Headquarters Sixth US Army
Presidio of San Francisco, California

Under-the-dash-room in the popular little Volkswagen (VW) sedan is very limited; what is available is complicated by the location of gear-shift lever, hood lock button and the serrations in the underhood metal flooring.

The minified VW transmitter was designed and constructed with space and power limitations in mind, for installation in a 1957 Volkswagen. However, it can be installed in any other car where space is at a premium.

One of the major problems facing the radio amateur today in the construction of his own equipment, is the availability of small metal chassis-panel-cabinet combinations which do not require extensive cutting, bending or shaping. Most amateurs are just not equipped for much metal work and are usually forced to use metal utility boxes of two piece construction. Letters from a few manufacturers relative to the situation have not been too encouraging.

After shopping around, it was decided to use a de-nuded BC-1206C surplus aircraft radio receiver chassis, panel and cabinet for the construction of the rf portion of the transmitter. The unit is inexpensive, sturdy and widely available. Measuring only 3 $\frac{7}{8}$ " high x 3 $\frac{7}{8}$ " wide x 6 $\frac{5}{8}$ " deep, it fits nicely under-the-dash out of the way, and allows easy chassis removal. Although the transmitter was originally designed for the VW's 6 volt electrical system, a few small changes readily convert it for 12 volt operation. There are a number of installation and noise suppression problems in the VW not encountered in cars with front mounted engines and batteries.

Circuit Description

Referring to the transmitter schematic in fig. 1, it can be seen that a triode-pentode (6U8) is used as a crystal oscillator-doubler-buffer which provides sufficient drive to a 2E26 final for operation on the more popular mobile bands—10, 40 and 75 meters—as well as some MARS frequencies.

The oscillator is conventional and oscillates well with either 7 or 3.5 megacycle crystals.

Band switches S1, S2 and S3 are used for tri-band switching. An rf choke (RFC-2) is used instead of a tuned circuit for 40 and 75 meter operation because there is sufficient drive available on these two bands.

All slug-tuned coils are sufficiently broad for wide frequency excursions.

An 0A2 voltage regulator is used to stabilize oscillator plate voltage and minimize frequency modulation. Additionally, resistors (R4-R6) serve not only to drop the available common 300 volts but also afford some decoupling.

To meter final cathode as well as 2E26 grid currents, a midget 0-1 milliammeter is used. Switch (S4) removes screen voltage and simultaneously connects shunt (R7) for reading final grid current, as well as reapplies screen voltage and connects shunt (R8) to allow indication of total final cathode current.

Meter shunts (R7-R8) are wound on $\frac{1}{2}$ watt resistor forms with No. 30 enameled wire to enable the meter to read up to 5 and 100 milliamperes respectively.

The Pi output network works exceedingly well with a center loaded whip on 75 and 40 meters; and a straight unloaded 8 foot whip on 10 meters.

To take advantage of the small battery in the VW, high voltage current requirements were held to a minimum by using a class "B" modulator consisting of a 12AU7 speech-driver stage, transformer coupled to a pair of 12AX7's in parallel.

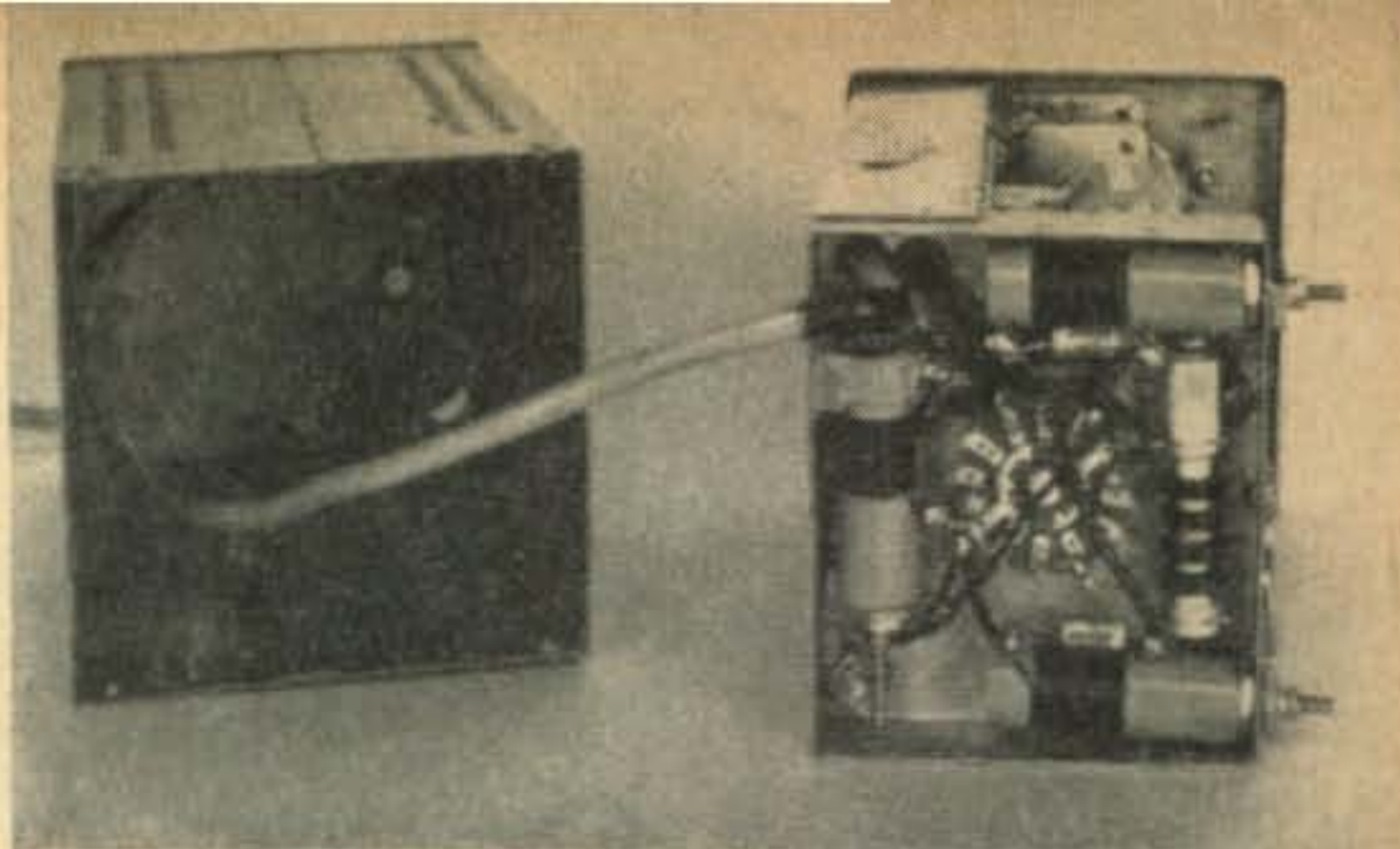
When 12BH7A's are used instead of the 12AX7's, they can be driven a little harder. The addition of feedback through (C20-R12) does assist in cutting down a little on distortion and deserves a try. This circuit was added after the photographs of the equipment were taken. If feedback is used (C19 and C18) may be eliminated.

For cw operation on the MARS frequencies 6997.5 or 3347 kc or on the ham bands, cathode keying works exceedingly well. However, coil L2 must be readjusted for 3347 kc operation.

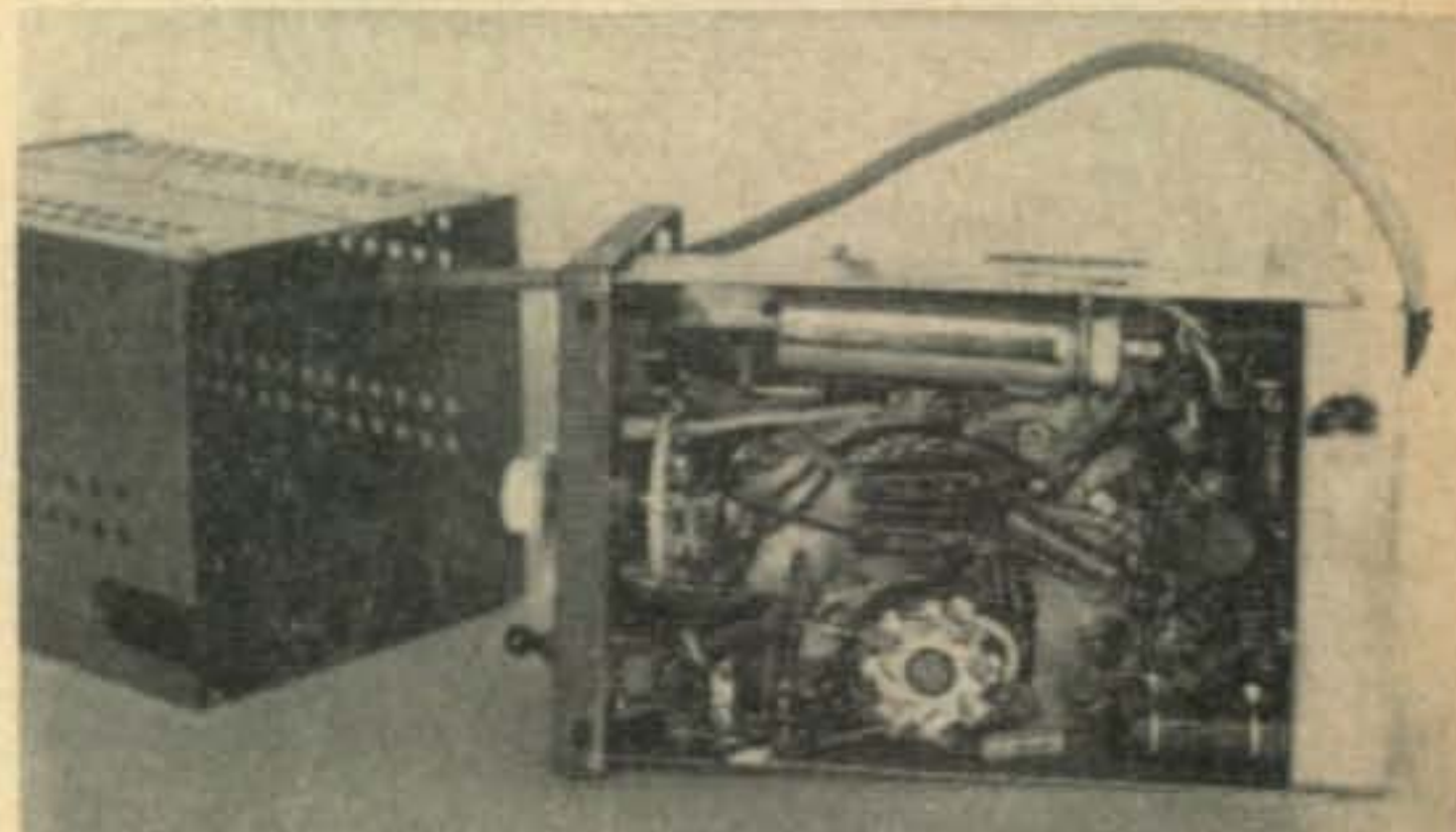
Construction

The entire rf portion of the transmitter takes advantage of every inch of available BC-1206C chassis space. Nearly perfect shielding of the exciter portions of the transmitter is accomplished by mounting all coils and bandswitch S1-S2 (except the 10 meter coil L4) on the

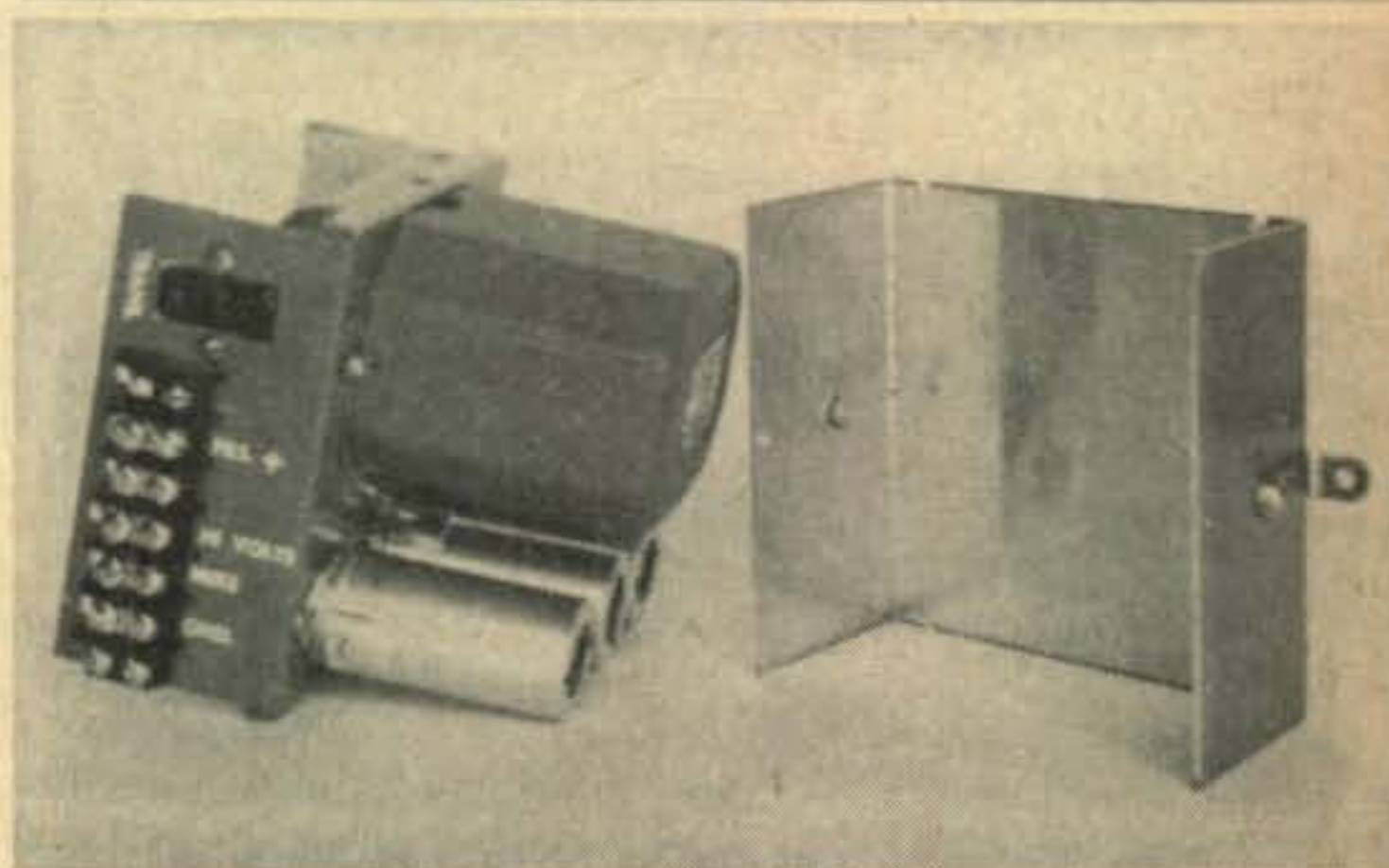
Rear view of transmitter showing oscillator and doubler coils as well as band switch.



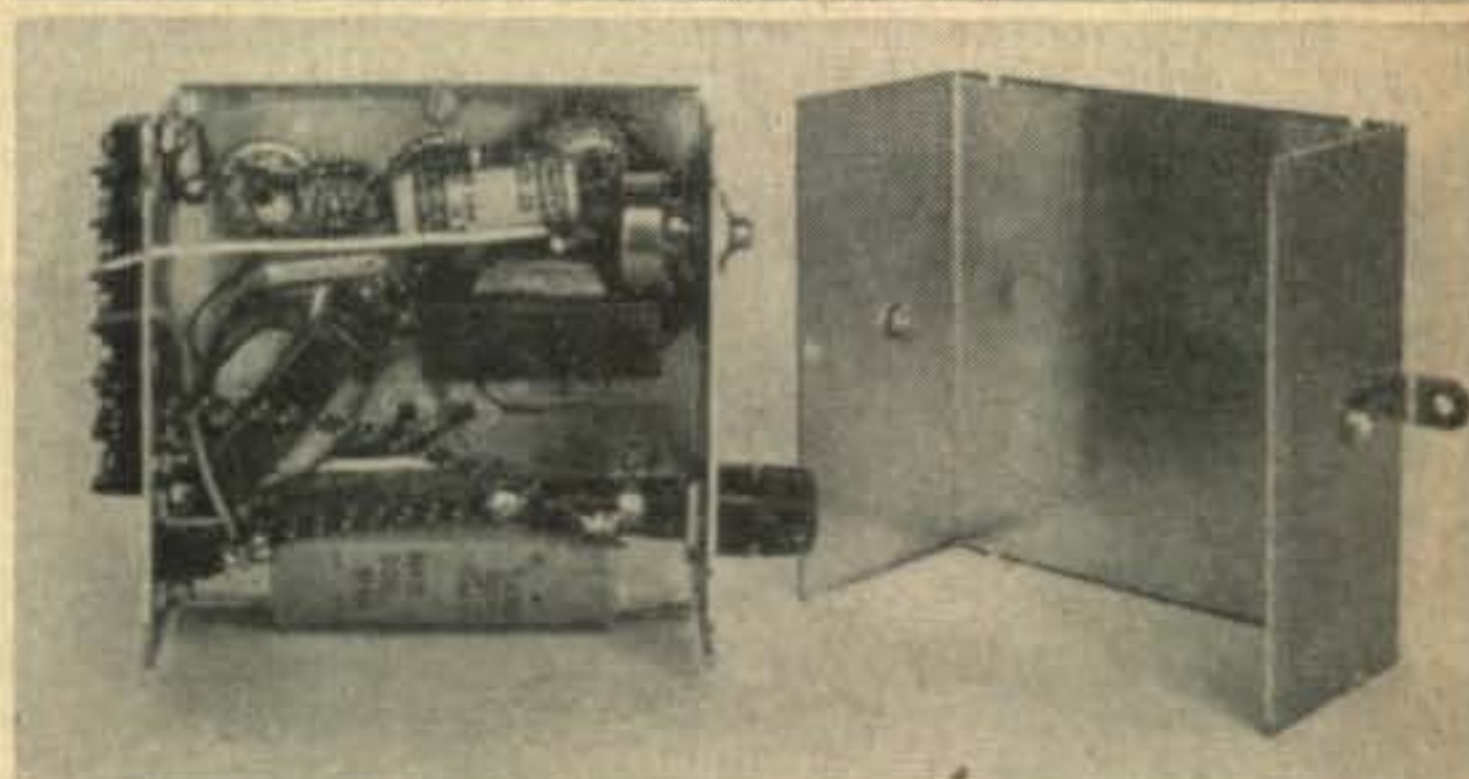
Under-view of transmitter chassis. Tube shield protects OA-2 VR tube. Final bandswitch can be seen in front center. Coil at lower left rear is the 10 meter doubler output coil.



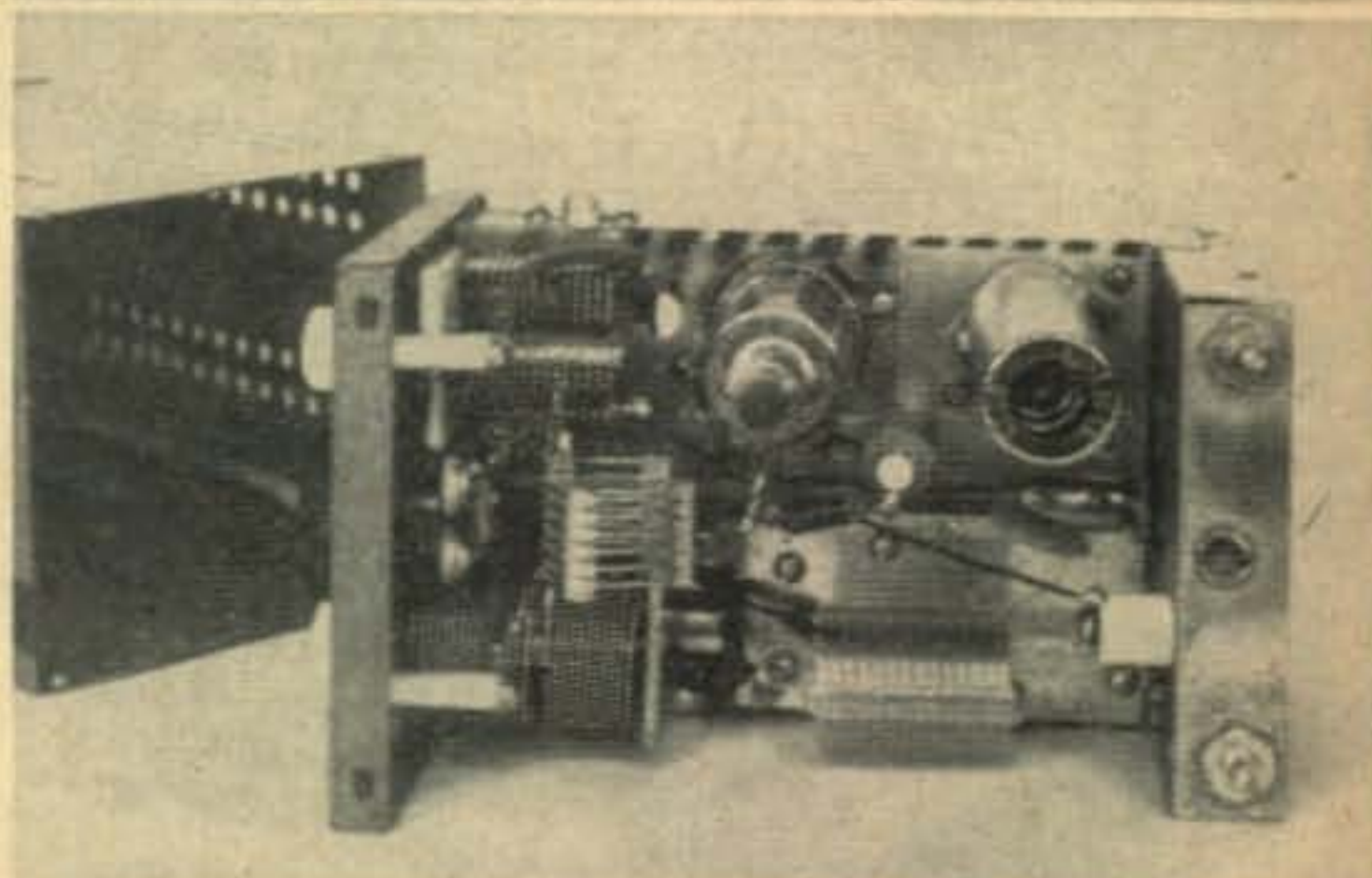
Rear uncased view of modulator showing connection strip and transmitter outlet.



Under-view of modulator showing parts placement.

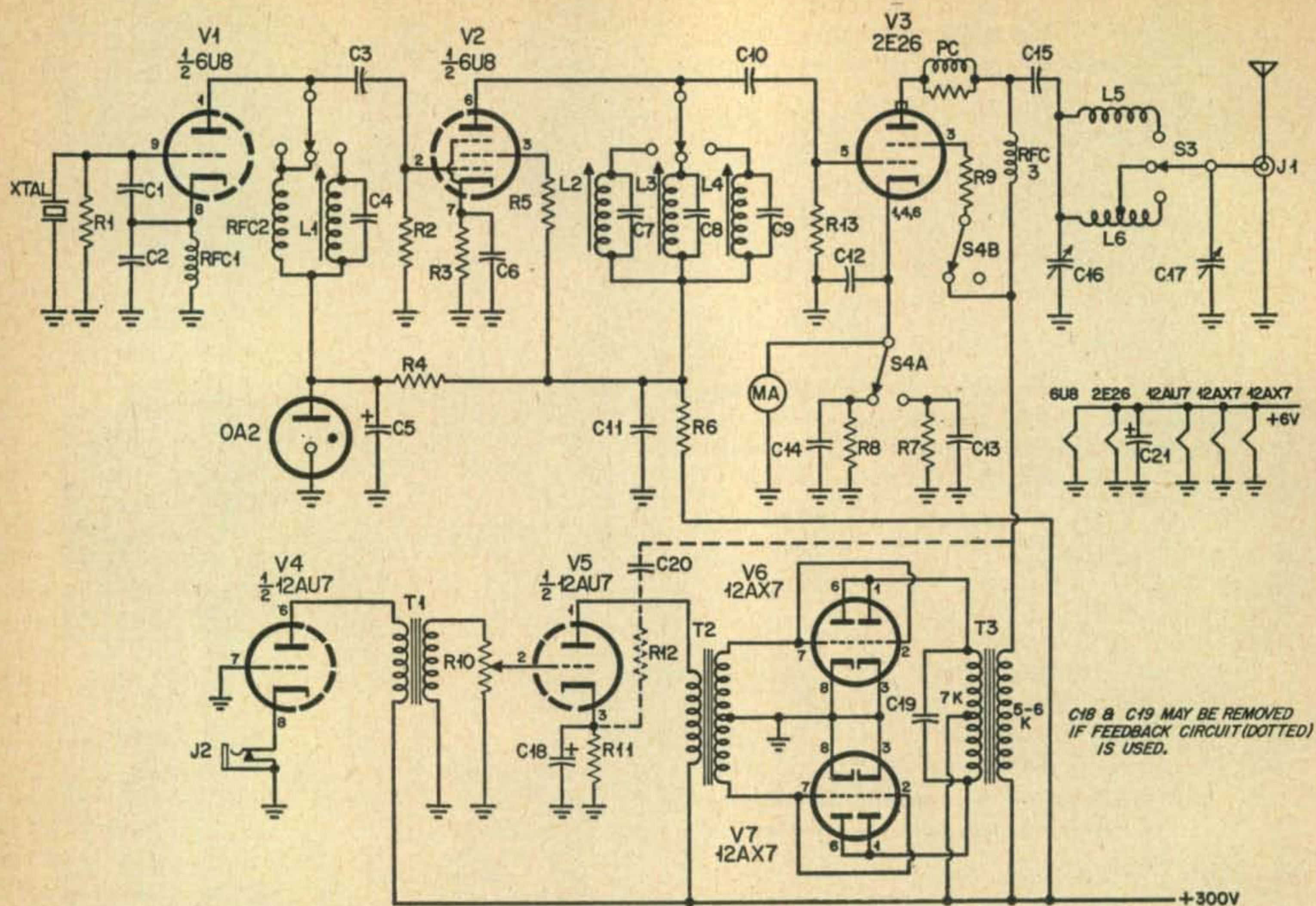


Top-view of transmitter showing parts placement. The 10 meter final coil can be seen attached to two stand-off insulators directly behind midget meter. The final coil for 40 and 80 meter operation is directly opposite the 2E26 and 6U8 tubes.



Transmitter and modulator cased.





Note: For more drive to the 2E26, increase plate voltage to 275 volts on the 6U8 pentode plate.

rear of the chassis.

The final coil (L6) is mounted on small standoff insulators by notching a polyethylene strip attached to it to fit under the two retaining screws.

The 10 meter final coil (L5) is mounted on two stand-offs on the front panel in original holes and one end of the coil cemented to the frame of condenser (C17) for extra stability. If one is satisfied with lower efficiency on 10 meters, Coil (L6) can be tapped for 10 meter operation, thus obviating the need for Coil (L5).

Milliammeter (M1) is mounted in the original panel-dial hole after it has been carefully reamed out for a snug fit.

Only four original holes on the front panel were not used; these were filled with snap-in buttons and screws.

Bandswitch (S3) was mounted in the lower center of the panel and is a very tight fit. Leads should be soldered to this switch before it is mounted.

The crystal socket is connected to the 6U8 triode (oscillator) section through a shielded lead which is carefully grounded along its length.

A bakelite shaft is attached to bandswitch (S1-2) and brought out to the front panel.

The OA2 voltage regulator tube is mounted on a metal standoff directly opposite the 2E26 socket. Original chassis holes under the final

coil (L6) and 6U8 tube were covered with a small piece of aluminum. The original antenna plug socket was replaced with a ceramic filled phono jack.

Coil (L1) was mounted by means of an "L" lug. A hole was drilled directly opposite its slug screw for ease of adjustment.

The 2E26 socket is mounted on small 1/2" standoffs. Because of the close fit of the socket, its connections had to be pushed flat.

Power cable is brought out to the left rear of the chassis and terminates in a plug which fits into the modulator.

The LMB 143 box chassis serves very well for the modulator. Construction details for the modulator are easily seen in the photographs.

Adjustment and Operation

All coils excepts those in the final are pre-tuned to mid-bands by using a grip-dip meter.

With power applied to the 6U8, all slug-tuned coils are broadly peaked for 2-3.5 mils drive to the 2E26. Switch (SW4) should be in the "G" position.

With SW4 in the "P" position, C-16 is dipped for minimum current (with antenna connected); then C17 is adjusted for proper loading (50-60 mils) and C16 once again re-dipped and C17 readjusted. Sometimes the dip

[Continued on page 107]

The Cheapest Way Out—I

Richard L. Nelson, K6OLS

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Chula Vista, Calif.

Perhaps this article and others from time to time will help clear some of the confusion which seems to surround the area of insurance for the ham radio operator. While it won't improve his DX rating and won't improve his operating technique, the acquisition of proper insurance will certainly provide protection against many of the unforeseen hazards of the hobby of amateur radio and sufficient peace of mind to make it more fun, to say nothing about being just good business.

Gotten any new gear lately? Did you insure it? Ever make an inventory of the shack? You should. If the neighbor puts his finger on the plate cap of the 813 while saying "What's that th*|\$-? and decides to sue you because his wife can't sleep due to the neon glow in his eyes—who is hiring your lawyer? And who is paying the judgment if the jury says she collects—he probably won't be here. What is gear worth that you design and build yourself? How about surplus gear that has been converted to ham use—what is it worth? When the family car was klaubered the last time, was that 75 meter mobile rig insured? And remember my grid-dip meter that you borrowed and someone stole? I can't find a use for the twelve 808's that you gave me to replace it. And I can't finish the new exciter I am building until I dip the coils, so—\$\$\$\$\$. These are some of the questions and problems we hope to provide general answers in this and other articles.

Therefore, at the risk of having every copy of CQ flung into the nearest "round file" and subscription cancellations by the bag-full, I will tell you now that I am an insurance man. Please don't get panicky. Just brace yourself—hang on to the chair with the other hand. First off, let's talk a little about that ugly word—"Liability".

There are always a few—to use an old army phrase—"guard house lawyers" who have no training or experience but know more about the technicalities of any given situation than anyone else. These remarks are not for them. We are speaking to the average individual who has made an investment in his radio shack and thinks that it is sound business and wise to protect the family budget by insuring the property that his family has gone along with to permit his or her hobby. We are primarily interested

in informing that average OM of the easiest way of giving the family budget the protection he wants it to have. We are not interested in vague isolated hypothetical possibilities of what could happen at the railroad crossing at 3:00 am. in the morning with the wind from the south in the light of a full moon. We would be happy to go into them on an individual basis—or better yet—see a good attorney.

No one but an idiot would disagree with the accepted practice of providing a master switch to knock off all of the power in the shack at one convenient intelligent source. Or, the accepted practice of providing fuses in power supply circuits. We call it a good investment in safety. We are discussing here a good investment in protection and peace of mind.

If you don't protect yourself with personal liability insurance, at a cost of about \$10.00 per year—you're crazy! Here's why: An individual's right to sue cannot be legislated away. You can sue me because I have red eyes and green hair if you feel it has caused injury or damage to you. Ridiculous? Yes, but anyone has a right to a court of law for recovery or damages due to bodily injury or property damage from negligence of another individual. You might personally disagree with that right—but it is still there and you have to live with it.

Our ham club has more or less encouraged the development of Novice operators. We believe that our efforts help in some measure to combat juvenile delinquency and besides, we meet some very nice adults. But, if, at our club house a prospective junior operator is knocked unconscious—perhaps not even breathing—we got real problems. Doctors say that brain damage can result after three to five minutes of anoxia (no oxygen to the brain). Right then and there all charitable thinking ceases! Stops! Ends! This 15 year old who was a pretty sharp youngster has sustained a brain injury. When the smoke and excitement clears, and just when you think everything has calmed down—someone knocks at the front door along about dinner time and quietly hands you a little legal paper called a complaint. This paper states in formal legal language just how negligent some people think you were when that youngster got hurt. (You can't buy insurance now—do you know a good lawyer?)

The jury will decide the percentage of permanent disability. 25%? And he was 15 years old? From age 15 to age 65, the usual age of retirement, is 50 years. Perhaps he could have averaged \$5000 in annual income for those 50

[Continued on page 98]

Designing QSL's at Home Part II

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Design from Two-Color Linecut Plates

Two-color designs bring a beauty to QSL's impossible to capture with single color treatment. Part I of this article covered color effects and possible variations with single linecut plates. These variations, however, limited color tone to one ink with a second color or white obtained from the card-stock.

Whether the design lines and enclosed areas printed solid or were broken up with zip-a-tone patterns for subdued shades, they still printed with the same density color tone. To the eye, the shaded area caused an illusion making those areas seem a lighter color. But, regardless of this camouflage, an annoying insistence of color-sameness spreads across the card.

Another difficulty of single color printing occurs from theme clashes. When designs are objects only, color clashes are minimum. Scenes containing water and people or sky and people definitely clash in one color. The following explanation illustrates this condition: A one-color QSL has a predominance of sky. Naturally, then, the card should print some shade of blue. Suppose, however, a person or part of a person forms part of the design. You have but two choices; leave the white card-stock show for the person, or use zip-a-tone for lighter blue in these areas. Neither of these are natural though white is better than a blue complexion. Likewise, water scenes including a person give the same unnatural effect if green is selected for the water.

Two-color printing allows a wider field with greater opportunity for realism. Various parts of the design can be approached with truer colors. Two solid colors with their screened counterparts for the lighter areas are available. A much greater possibility exists than you might expect through intelligent selection of the basic colors. This affords greater opportunity to avoid clashes and to camouflage more successfully. Again, the card-stock supplies another color allowing you three basic solid colors. Numerous variations of these basic colors are possible and will be explained a little later in this article.

Artwork for Two-Color Linecuts

Designs created for single linecut plates are suitable after some modification for two-color plates. The basic original drawing remains

much the same. Certain emphasis lines needed for single color printing are removed; we now obtain this effect from the second color plus the multiple screen variations. Removal of the emphasis lines occurs during separation of the original artwork into two pieces.

First we must decide upon the colors we want in our QSL card. Next determine the areas of the design to be printed in each color. This selection includes areas to remain the color of the card-stock and those to be lightened by zip-a-tone screens.

If everything prints in two colors some of the design must appear on one piece of artwork and the remainder on the other. From these two pieces of artwork the photo-engraver makes two printing plates (one for each color). If the card-stock forms a third color, only a portion of the original drawing will appear on both pieces of separation artwork: the portions to be in card-stock color will not appear on either piece of the artwork. This part of the design doesn't print; it appears on the finished QSL card as a result of the portions around it being printed from the two color plates. See figure 1.

Therefore, we see that breaking up the original drawing into pieces for each color used is all that has to be done to use any of the drawings illustrated in Part I of this article for two-color linecut processing.

Mention was made earlier that much greater possibility exists than you might expect through intelligent choice of basic colors. Let us examine the color scope at this point. Two-color ink work provides numerous variables besides the two solid colors and the card-stock color. Enumerated, they are: two solid ink colors, card-stock color, zip-a-tone screening of one ink over card-stock, screened use of other ink over card-stock, screened use of one ink over the other solid ink, same as preceding but reversing the inks, and one solid ink over the other solid ink.

Count the above possibilities and you'll find there are *eight*. But this is *not* all by any means. Ink manufacturers' color swatch books, show examples of each solid color with three gradations of screening; twenty-five percent, fifty percent and seventy-five percent. See figure 2. The density of the screen tone can vary from nearly white to the solid color for each ink used. Therefore, we have a large range of zip-a-tone patterns from which to obtain the color

Fig. 1. (a) First color artwork.

(b) Second color artwork.

(c) Card-stock color design formed when other colors print.

density desired. Remember, however, when working to double size of finished QSL, use large enough zip-a-tone pattern to achieve color shade wanted when your artwork is reduced to half-size!

We are now ready to consider a design and make the separation artwork. Keep in mind however that all artwork for color printing will be black and white. No color appears in the design until after it reaches the printing shop in the form of printing plates. Color is added only when the printing presses run.

In the beginning it is always best to keep your QSL designs simple and your color separation artwork uncomplicated. Because of separating the design into two pieces, more pains must be taken with these designs than is necessary with single color artwork. Bearing this in mind, color separation work will lean toward simplicity.

Adapting YL Design for Two Colors

Our first attempt at color separation work will adhere to the recommendation for simplicity. Therefore, the YL design "going places", illustrated in Part I, will be used first. Figure 3a shows this design as created for single color work.

If printed in one color, the solid color could be applied to all the ink-lines of the drawing and the card-stock color used for the white portions. This treatment produces an attractive card though not very realistic. An improvement might be to use a zip-a-tone for the face and arms of the girl. This produces a two-color automobile (one ink plus card-stock) and a screened tint of the ink for the girl's complexion. This is about as far as we can go with it in one color. Now let's look at it from the two-color angle.

If we wish the card to favor realism, blue should be considered for the background and call letters with either red or black for the dark portions of the automobile. Features of the girl could be a screen of the red ink.

Tossing realism to the winds and striving for a really snappy card, used dark red for call letters with a tint of it for the background, let the black areas and lines stay black, and keep the girl's skin and remaining areas of the car white from the card-stock. This would be my first choice because I lean toward contrasty effects. But the blue with red or black suggested in the previous paragraph should produce a striking card on the pastel side.

By overprinting one ink on the other either screened or solid (a darker ink overprinting a lighter one), we could obtain other pleasing

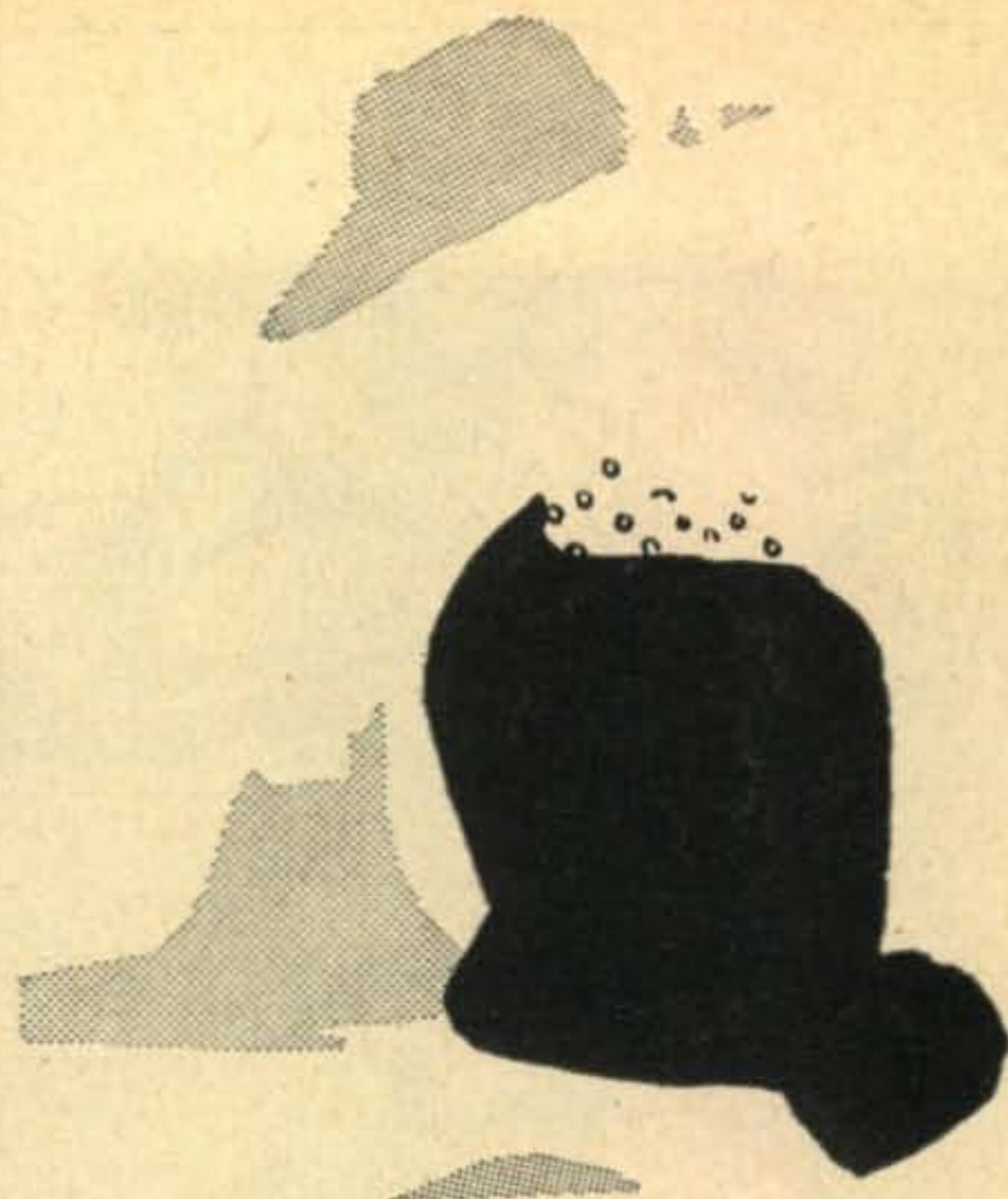




Fig. 3. (a) Original YL drawing.
(c) Black color-plate artwork.



(b) Red color-plate artwork.
(d) Effect of artwork in register.

effects and possibly more realism. However, let's not complicate the design separation during our initiation period. Simplicity is the best policy here.

Either the color suggestions I made or others of your own choosing can be used. The following procedure for separating the artwork will still apply if you use two basic inks and have each one cover the same areas as the ones in my suggestions.

Separating the Artwork for Color Plates

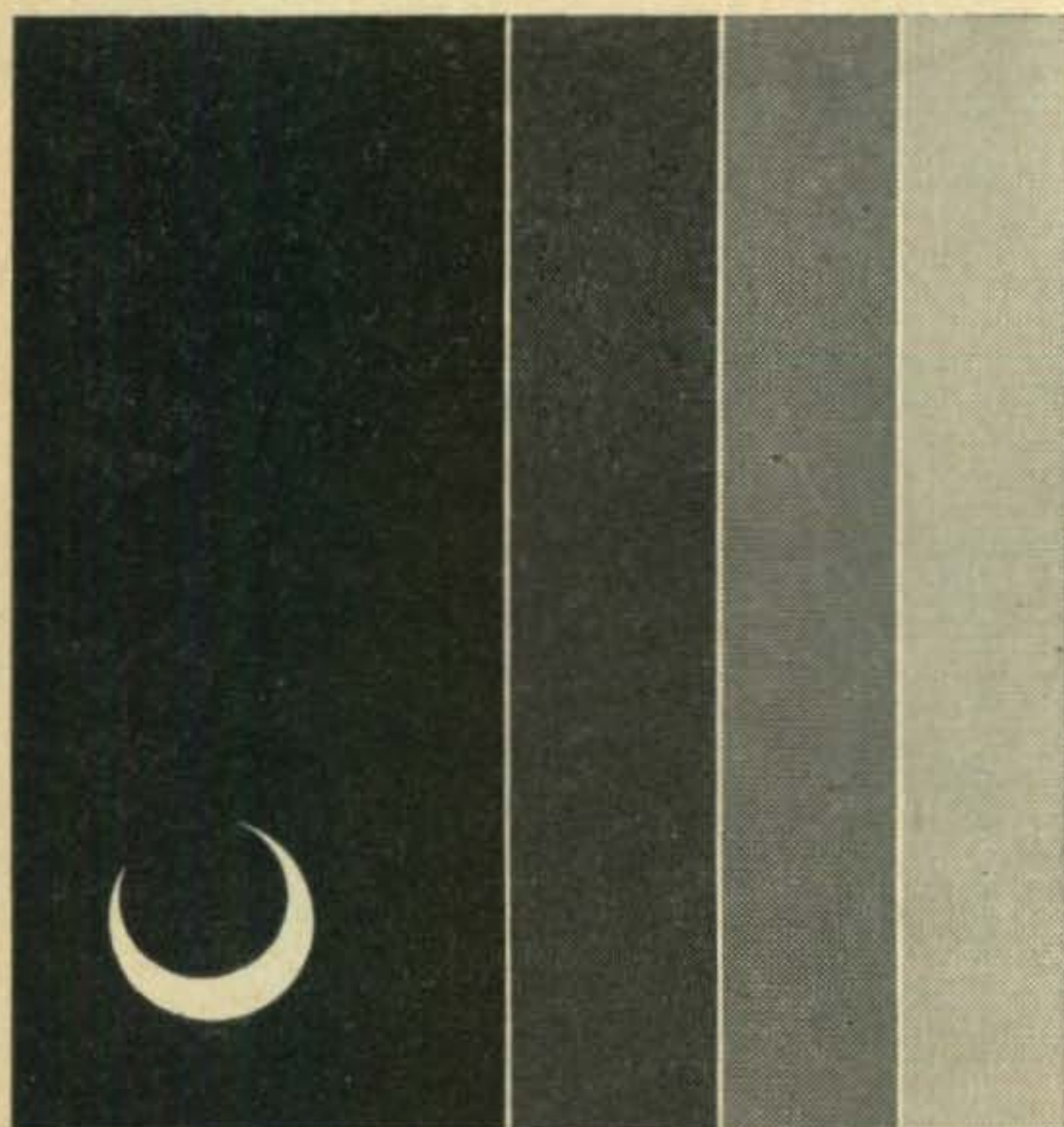


Fig. 2. Example of ink manufacturers' color swatch.

Color work injects something new — register. For the first time in the article we are separating colors. If they are to fit in place so the finished printing looks like the original drawing except for color having been added, there must be some way to hold both pieces of artwork in position. Maintaining position with respect to each other is called "register". To obtain register place crop-marks on both pieces of artwork.

Crop-marks are used two ways. They are applied to bound the illustration area that is to print in cases where the entire image is not wanted; and they are used as guide marks for placement of overlays when we do color separation work. See figure 4a, b, c and d.

By means of the crop-marks, overlays can always be returned to exact register with the original artwork. Later, the photo-engraver will utilize them when photographing each piece of

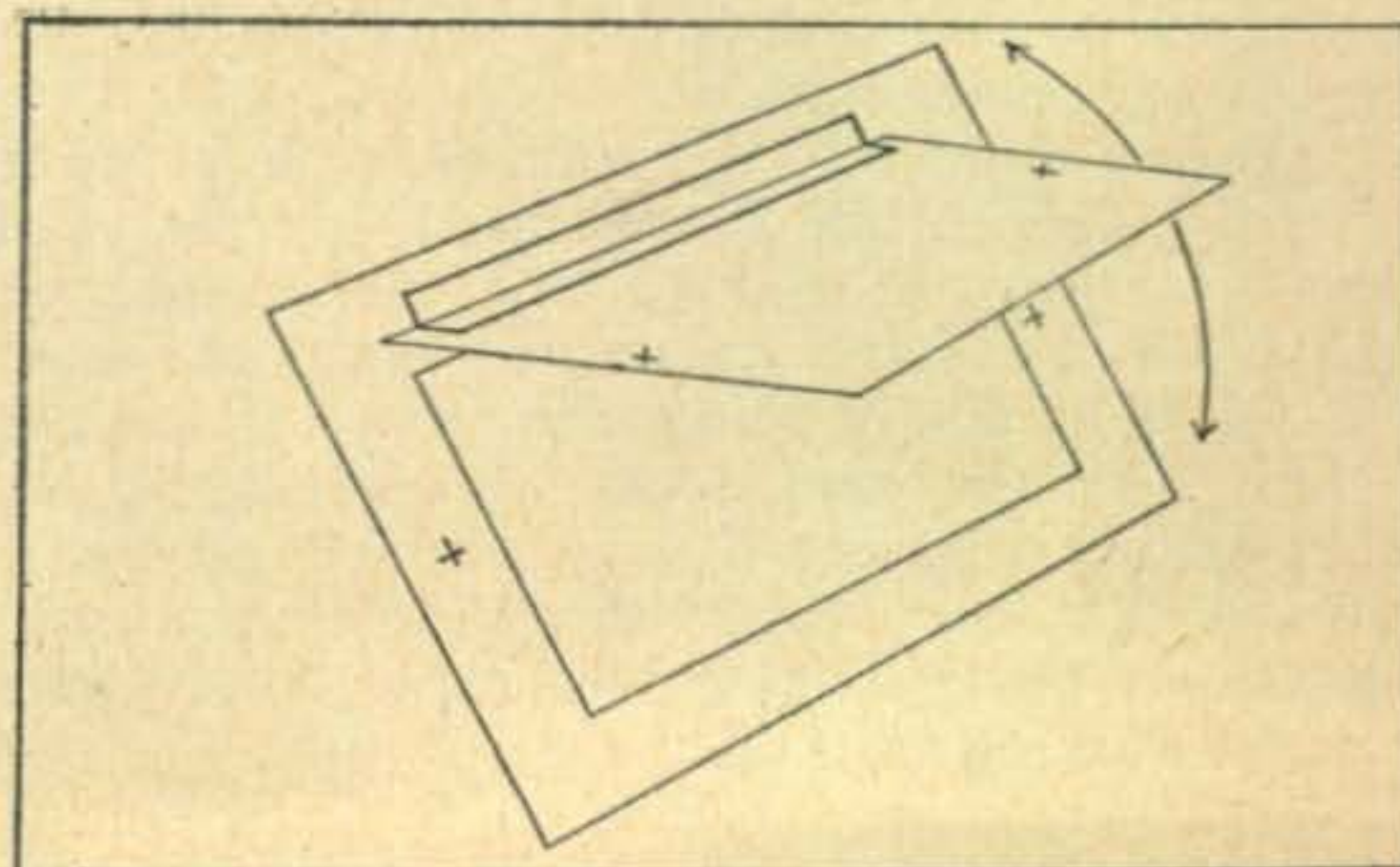


Fig. 5. Securing acetate overlay to original drawing.

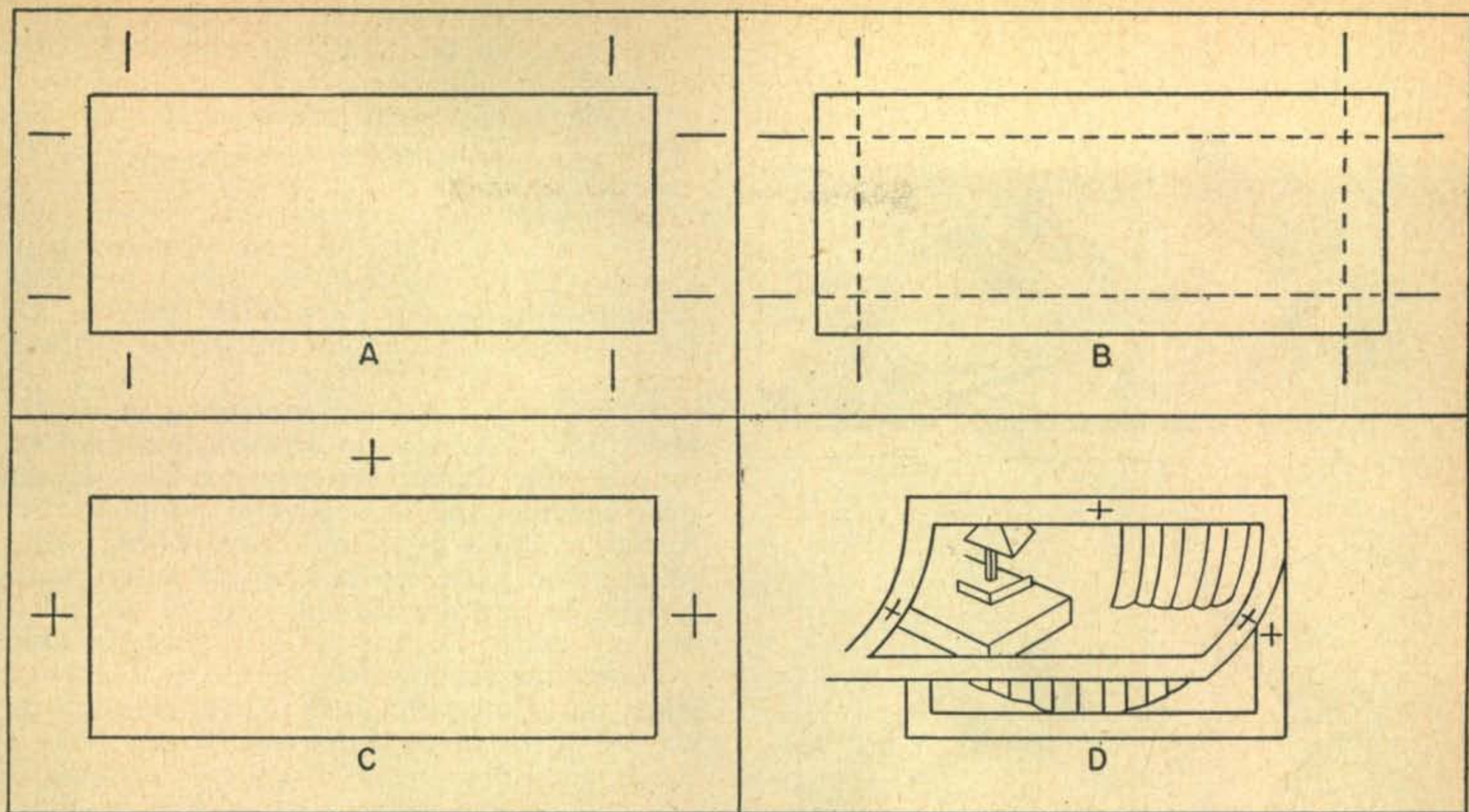


Fig. 4 (a) Crop-marks outlining illustration. (b) Effect of crop-marks on illustration size.

(c) Crop-marks for aligning color separates. (d) Crop-marks in place on original drawing and acetate overlay.

artwork. They are his guides for producing precision printing plates to exact scale and register.

The easiest way to make color separations is with an acetate overlay. This is a clear transparent material that will lay smoothly across the drawing. It also takes ink nicely. Outside the design area of the original drawing make crop-marks. See figure 4a. Now cut a piece of acetate to cover the entire drawing and fasten

it to the original drawing with a strip of cellophane tape across the top. See figure 5. Get 0.05 acetate from art-supply store.

Next, smooth the acetate over the original drawing with a rule and pen add crop-marks on the acetate exactly over the crop-marks on the original drawing. See figure 4d. Now we are ready to begin the actual color separation work.



Fig. 6. (a) Cutting zip-a-tone with razor-blade.

(b) Cutting zip-a-tone from photostat pattern.

(c) Stripping zip-a-tone cutout onto the acetate.

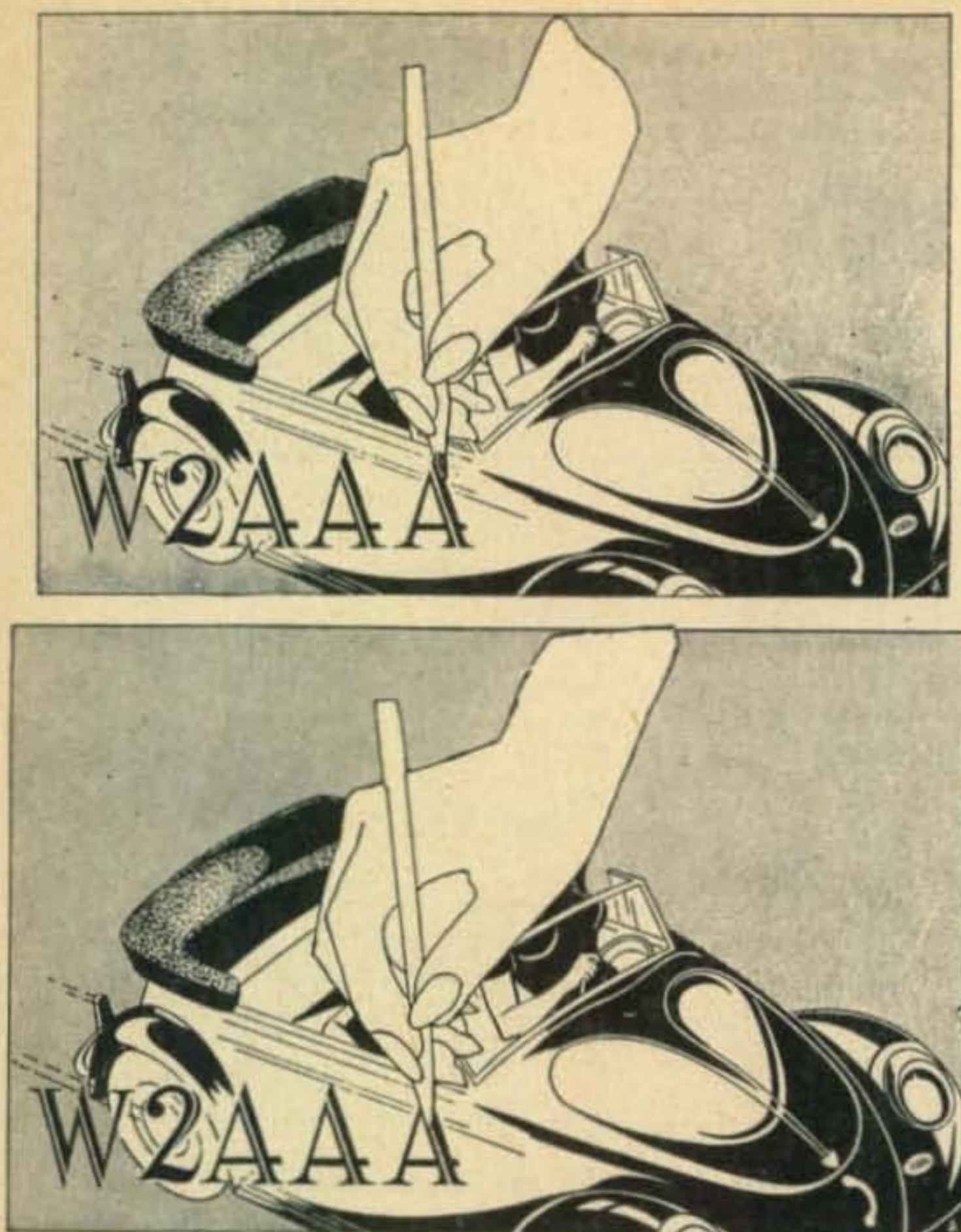


Fig. 7. (a) Painting letters over zip-a-tone screen.
(b) Painting white streak in letters.

Using the separation suggestion made earlier, the call letters will be one color with the background a tint of this color. This means that the call letters will appear solid on the acetate directly above those on the original drawing; the background surrounding the car and the portions of the girl extending beyond the car will have a zip-a-tone pattern applied. See figure 3b.

The zip-a-tone should be applied first. Lay the pattern (preferably a dot pattern for this design) across the acetate and firmly smooth into place. Artists would now use a razor-blade to cut the zip-a-tone around the automobile and extended portions of the girl. Some may find that this is difficult because your hand is too heavy to cut through only the zip-a-tone and not the acetate. Others, with a lighter touch, may experience no trouble with it. See figure 6.

If you do have trouble, another method can be used providing you have access to a good photostating house that will hold to dimensions. Get them to make a photostat of the original drawing. Across this spread a sheet of zip-a-tone. With scissors cut around the object not getting screened. By cutting the photostat and zip-a-tone at the same time, a background screen pattern is obtained. See figure 6b. Peel this screen from the photostat and lay it in place on the acetate. See figure 6c.

When cutting the screen pattern either by razor-blade or with scissors, just follow the car and girl outline. Ignore the call-letters: these print solid, so just paint them in over

the screen with India ink. See figure 7a. The white streak in the letters is made with white water-color paint. Use either a ruler and brush or a ruler and straight pen to make them. See figure 7b. This completes one color-plate drawing.

Some work still remains on the second piece of artwork which in this case is the original drawing. This requirement is reversed from that required for the first separation drawing. On the first one, we added; on the second, we must remove.

Whenever we painted something in on the first piece of separation artwork, we must remove it from the original drawing. The original then becomes the second color art piece. See figure 3c. This is easily done. Using white water-color paint, cover the call-letters completely. Several applications may be needed to obscure them. Thick paint will cover quickly.

Lower the acetate over the original drawing when the white paint is dry. Peer through the acetate at the original drawing. If any lines in the original drawing extend to the position of the call letters, the color of the modified original drawing will touch the color used for the call-letters.

The YL design will be more effective if this doesn't happen. Eliminate the condition by covering a little of each such offending line with white paint. This will permit a small amount of white to separate the colors and make the call-letters stand out. Figure 3b and c shows the completed separation artwork.

Adopting Western Design for Two Colors

This drawing is a little more involved than the YL design. Also, the finished artwork requires one ink to overprint the other in numerous places. Figure 8a shows the original drawing.

Basically, the procedure is much the same as the previous example. However, since color is somewhat spotty (a little used in numerous scattered places) we should mark on the tissue cover protecting the original all spots getting color and indicate the color. This will prevent overlooking any areas that should have color. Again, you can select your own colors. The finished artwork will suffice if you retain the same locations for each color.

Before proceeding further let's inspect this drawing for color treatment. What do you suppose this scene really looks like? I visualize the horse gray, the distant hills reddish black, shirt and roof-tops red, river reddish black, and land and leather chaps tan.

How near can we approach these colors by separating the original drawing into two-color artwork? The original drawing should now be analyzed.

Red for the man's shirt and the roof-tops is easy to produce; just paint those areas on an acetate overlay. The tan color too is easy to acquire; use a tan card-stock which should be

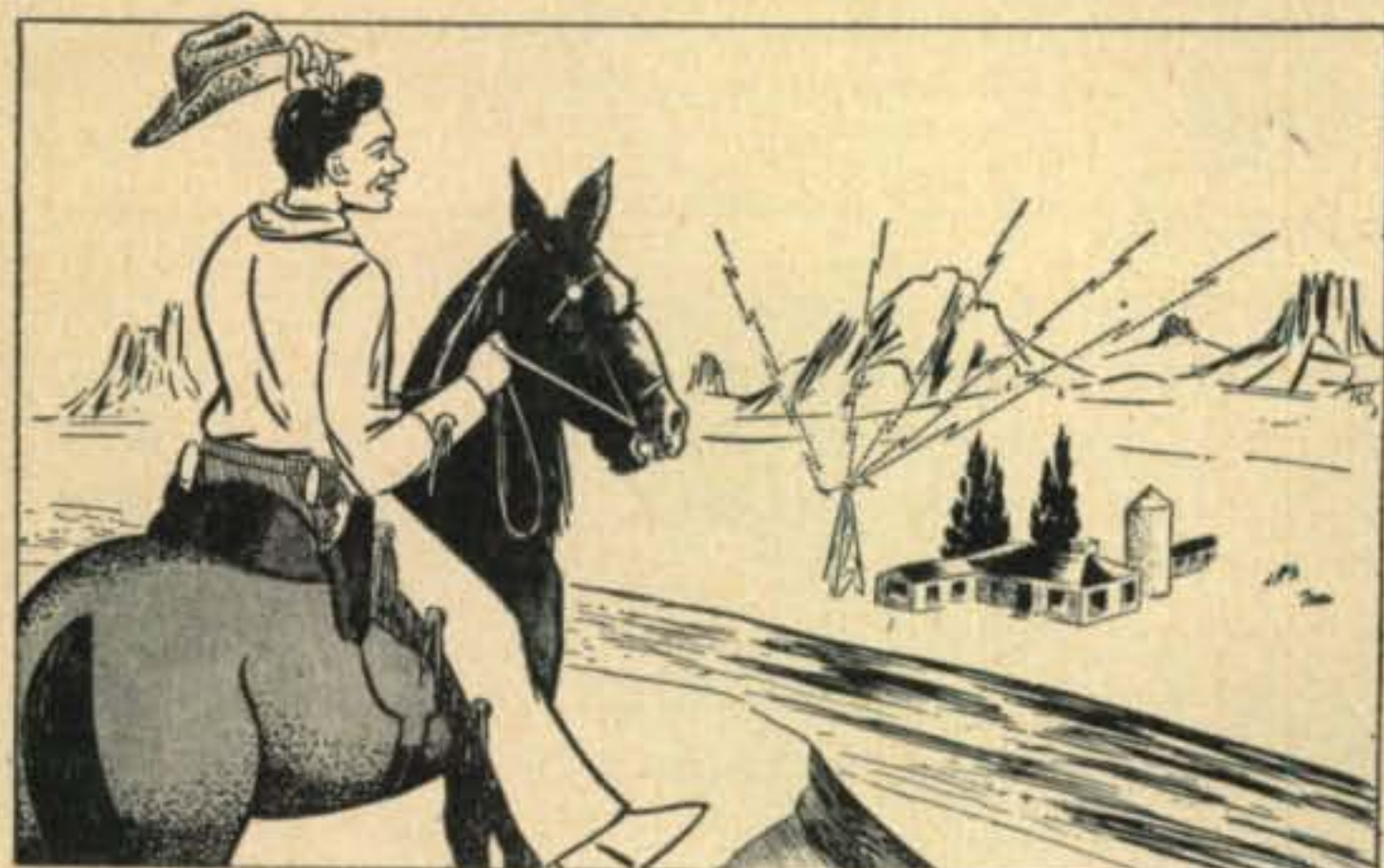


Fig. 8. (a) Original Western drawing. (b) Red color-plate artwork. (c) Black color-plate artwork. (d) Effect of artwork in register.

available. Gray for the horse requires a screen for the black ink. Reddish tints occur if screened red is printed on tan card-stock. Unfortunately, the sky will be tan too; however, it shouldn't be annoying. We can help allay this condition by putting a spot of red up there. So, we'll make the call-letters red.

Start off by placing crop-marks on original drawing. Next fasten an acetate overlay over the drawing. Now paint in the shirt, roof-tops and call-letters. When painting these on the acetate overlay, paint to the outside edge of the outline lines. All these will be solid red. Next, lay zip-a-tone over the design portions getting a red tint. These are the hills, hat, river, saddle and gun holster. Cut around the design with razor-blade to eliminate screen from unwanted areas. (The photostat-cutting method with scissors can also be used and the prices of pattern laid in place on the acetone.) This completes the red plate. See figure 8b.

Modification of the original drawing is next. Apply zip-a-tone over head and body of horse. Block out the call-letters either by painting with white paint or by pasting a piece of paper

over them. If the latter method is used notch the bottom of the paper to allow the radiation lines from the antenna to reach nearly to each letter. Look at the drawing through the acetate overlay to see that these lines don't quite touch the letters.

This completes the artwork. It should look like the illustrations in figure 8b and c. When printed, the black emphasis lines will over-print the screened red of the hills, river, hat and saddle. Emphasis lines are left in the shirt for shadow contour effects.

Adopting Atomic Mushroom Design for Two Colors

While the design was done with humor in mind, some ham locations may find it very appropriate. To obtain a fiery effect, print in black and deep orange on white card-stock.

The orange portion of the artwork will portray the fiery mushroom stem and the call-letters. The black portion of artwork will streak the orange and darken the extended water (Continued on page 108)



Fig. 9 (a) Original mushroom drawing. (b) Orange color-plate artwork. (c) Black color-plate artwork. (d) Effect of both pieces of artwork in register.

FM and TV

Interference

on the VHF Bands

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Judging from the conversation on amateur VHF bands, there are quite a few newcomers that are perplexed by the amount of interference they get from FM and TV stations. This article is written to explain why this interference is received and to point out a method of eliminating the bulk of the commercial interference. While the examples used apply specifically to the two-meter (144.0 to 148.0 mc) band, the information will be useful in determining the source of many interfering signals on any other amateur band.

To insure that all of the readers are on a common basis of understanding, let us briefly review the principles of the super-heterodyne. In this circuit the incoming signal is mixed (in the mixer or 1st detector) with the output of the local oscillator in the receiver, to change the signal frequency to the i.f. or intermediate frequency. The important product of the mixing of two frequencies that we are interested in, are frequencies that are equal to the sum or the difference of the two frequencies. As an example, the mixing of an incoming signal of 1000 kc with a local oscillator frequency of 600 kc would result in frequencies of 1600 kc (the sum) or 400 kc (the difference) appearing in the mixer tube. One or the other of these two frequencies is favored because the i.f. amplifier is tuned to that frequency. The sum and difference frequencies are relatively far apart and in lower frequency receivers with a single frequency i.f. this also helps to eliminate the undesired frequency from further amplification.

TABLE NO. 1

TABLE OF HARMONICS

Showing harmonics generated in a 3d overtone oscillator using a crystal frequency of 7.222 mc.

21.666 mc	Oscillator output frequency
43.333	2d harmonic <i>undesired</i>
65.000	3d harmonic from tripler stage to drive doubler
86.666	4th harmonic <i>undesired</i>
108.333	5th harmonic <i>undesired</i>
130.000	6th harmonic from doubler stage for mixing with incoming 144 mc to produce i.f. of 14 mc
151.666	7th harmonic <i>undesired</i>
173.332	8th harmonic <i>undesired</i>

Bearing this in mind, let's look at the super-heterodyne from another angle. There are two different frequencies that when mixed with the local oscillator frequency will be converted to the i.f. frequency. These frequencies are the sum or the difference of the i.f. frequency and the local oscillator. With an i.f. of 455 kc and a local oscillator frequency of 1000 kc, the mixer will change either a 1455 kc or a 545 kc signal to the intermediate frequency. Whether both signals are received or not depends primarily on the front-end selectivity.

It is common practice on 144 mc and up to use a converter which is essentially a mixer and local oscillator to convert the VHF signal to a frequency covered by the standard communications receiver. While one frequency of the receiver can be used as the first i.f. with the converter local oscillator and mixer tunable, the majority of VHF converters have a fixed frequency local oscillator, a broad-band mixer and a tunable i.f. amplifier (the receiver front end).

Stability

To insure stability the local oscillator of the converter is crystal controlled. Unfortunately crystals are not obtainable having a fundamental frequency high enough to serve as a local oscillator so it is necessary to multiply the crystal frequency by the means of frequency multipliers in the same fashion as the frequency is multiplied by doublers and triplers in a transmitter. A head start in this multiplying is obtained by starting with an overtone oscillator, usually one operated at the third overtone of the crystal. Thus a multiplication of approximately three is obtained right in the oscillator circuit without resorting to a multiplier stage. This also prevents any trace of the fundamental and 2d harmonic crystal frequency from appearing in the receiver.

A majority of the two-meter converters use an i.f. (communication receiver frequency) of 14 to 18 megacycles. This practically necessitates a local oscillator frequency of 130 mc in order to convert the 144-148 mc band to this

TABLE NO. 2

TABLE OF INTERFERENCE SOURCE FREQUENCIES

Oscillator Harmonic	frequency	Added 14 to 18 mc	Subtracted 14 to 18 mc
1st	21.666	35.666 to 39.666	3.666 to 7.666
2d	43.333	57.333 to 61.333	25.333 to 29.333
3d	65.000	79.0 to 83.0	47.0 to 51.0
4th	86.666	100.666 to 104.666	68.666 to 72.666
5th	108.333	122.333 to 126.333	90.333 to 94.333
6th	130.0		112.0 to 116.0
7th	151.666	165.666 to 169.666	133.666 to 137.666
8th	173.333	159.333 to 163.333	155.333 to 159.333

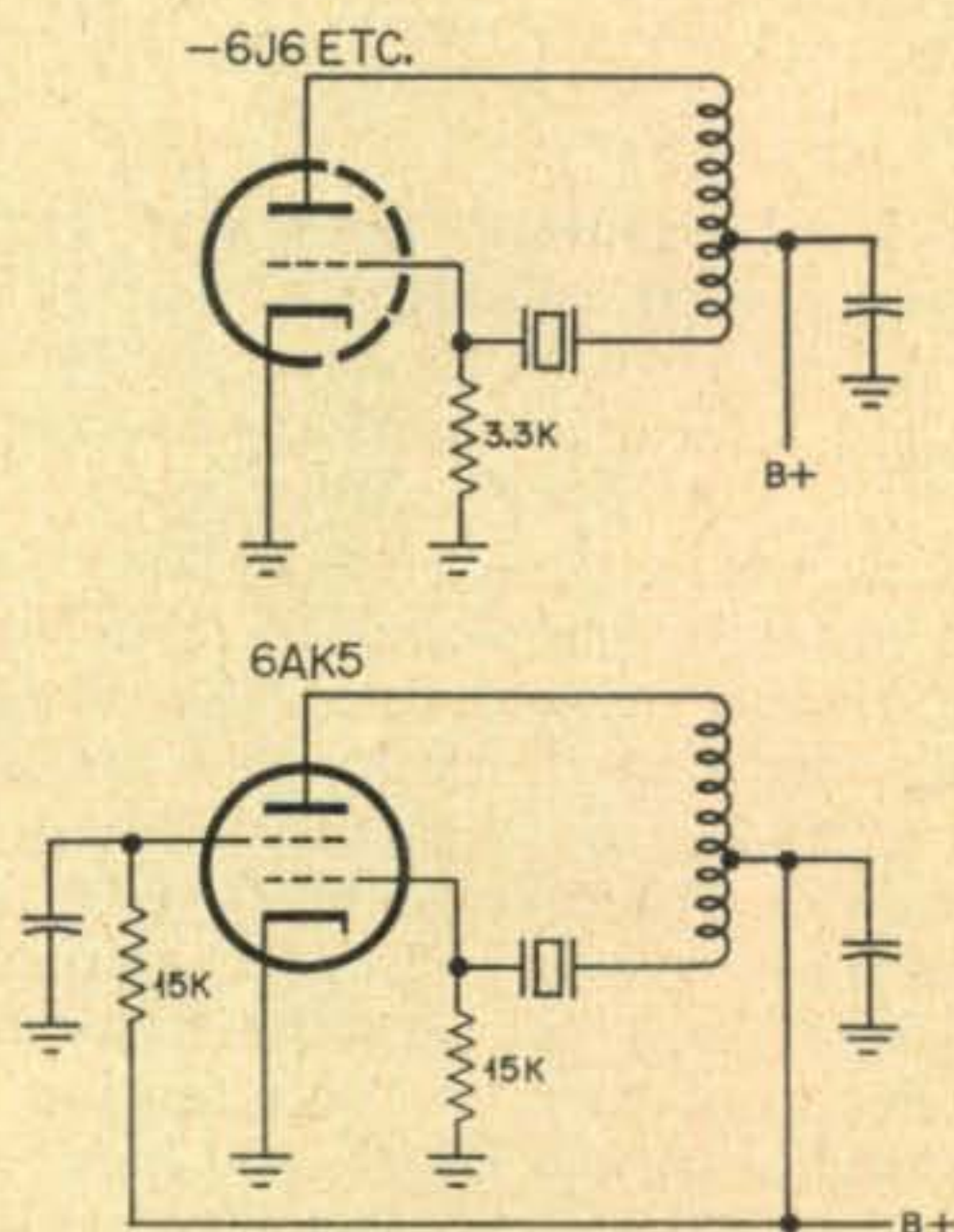
i.f. band. Most of these receivers use a 7.222 mc crystal in a third overtone oscillator circuit giving an oscillator output of 21.666 mc. This frequency is then doubled and tripled or tripled and doubled to 130 mc. This requires at least two more triodes in addition to the oscillator tube. Unfortunately the oscillator is relatively rich in harmonics and the multipliers amplify the undesired harmonics to some extent. Table No. 1 shows these harmonic frequencies up to the 8th harmonic. The coupling at UHF permits these harmonics to get to the mixer tube so that in effect the converter has a local oscillator of many frequencies. Although the undesired harmonics are of much lower amplitude than the 130 megacycles desired, they will mix with strong local signals to convert many FM or TV channels to the i.f. band of 14 to 18 mc. In Table No. 2, Columns 2 and 3 show the transmitter frequencies that can be converted to the i.f. band and result in an unwanted signal. If you want to go in for some detective work when an unwanted signal appears, add and subtract the i.f. frequency from your receiver (1st i.f.) frequency, to and from the oscillator harmonic frequencies and from this, determine the interfering transmitter frequency. Easier yet refer to Table No. 2. In Detroit, 7 out of 13 FM stations will mix with an oscillator harmonic so as to fall in the 14 to 18 mc band. So will two or three of the TV stations and stations in other services such as taxicab radio.

The cure

One cure, somewhat beyond the scope of the average ham, would be to use filters and traps. But there is an easier way. John Wasmuth, W8SBQ, optimistically wrote International Crystal of Oklahoma City and ordered a crystal for use in a 130 mc overtone oscillator circuit. Although we had never seen overtone crystals advertised for frequencies higher than 90 mc, much to our amazement they shipped a gem marked 130 mc. Later W8SBQ got even more optimistic and ordered a 137 mc crystal and got it. I inherited his 130 mc crystal. These crystals' fundamental frequencies are in the 18 mc band and work on their 7th overtone.

We have tried nearly all the "trick" overtone oscillator circuits with varying degrees

of success. The one circuit we can recommend is the simplest of all. This is a grounded cathode Hartley, tuned to the overtone frequency with the crystal between the tank and grid. The B+ is fed to the tank at a tap about 2/7 from the grid end of the coil. This utilizes the series resonance of the crystal. Either a triode or pentode can be used. This circuit is also a good fundamental frequency oscillator circuit, if the tank tunes to the crystal frequency. This crystal oscillator circuit is not a new discovery and has appeared in construction articles before. In general, however, it has been overlooked. This is witnessed by the fact that fully 75% of the articles on overtone oscillators or converters show circuits having two tanks and/or tricky feed-back control. W8SBQ recently wound a slug-tuned coil for this circuit and hit the right turns ratio and frequency



Two Hartley crystal oscillator circuits. Condensers are .005 mfd and coils are self-resonant, slug tuned, or tuned with a small variable.

without grid-dipping. You could never do that with one of the fancy pants two-tank circuits. Adjusting the oscillator is easy. Wind a slug-tuned coil, tapped 2/7 of the total turns from the bottom, that tunes to the desired output frequency with the slug 1/2 in, when in the plate circuit of the oscillator tube. If there are too many turns between the B+ tap and bottom of the coil (grid end) the oscillator will run self excited and will be tunable. Too few turns will not provide enough feed-back. With the right ratio of turns the oscillator will lock at the overtone frequency.

One trick will make adjusting the turns ratio easy. It is a bit difficult to move a tap 1/8 of a turn. Suppose we decided that we needed to move the tap up 1/8 of a turn towards the plate end of the coil so that the actual ratio would be 2-1/8/7. Instead of moving the tap up

[Continued on page 88]

Control station set-up at newspaper office. From left to right, W7DEM, Charles Beck, operates transmitter, while Betty Hartzig W7CPV, and Ruth Booth W7ITZ, tabulate results for press, radio, and news wire services.

Photos by W7DXY and W7NFZ

Club Project

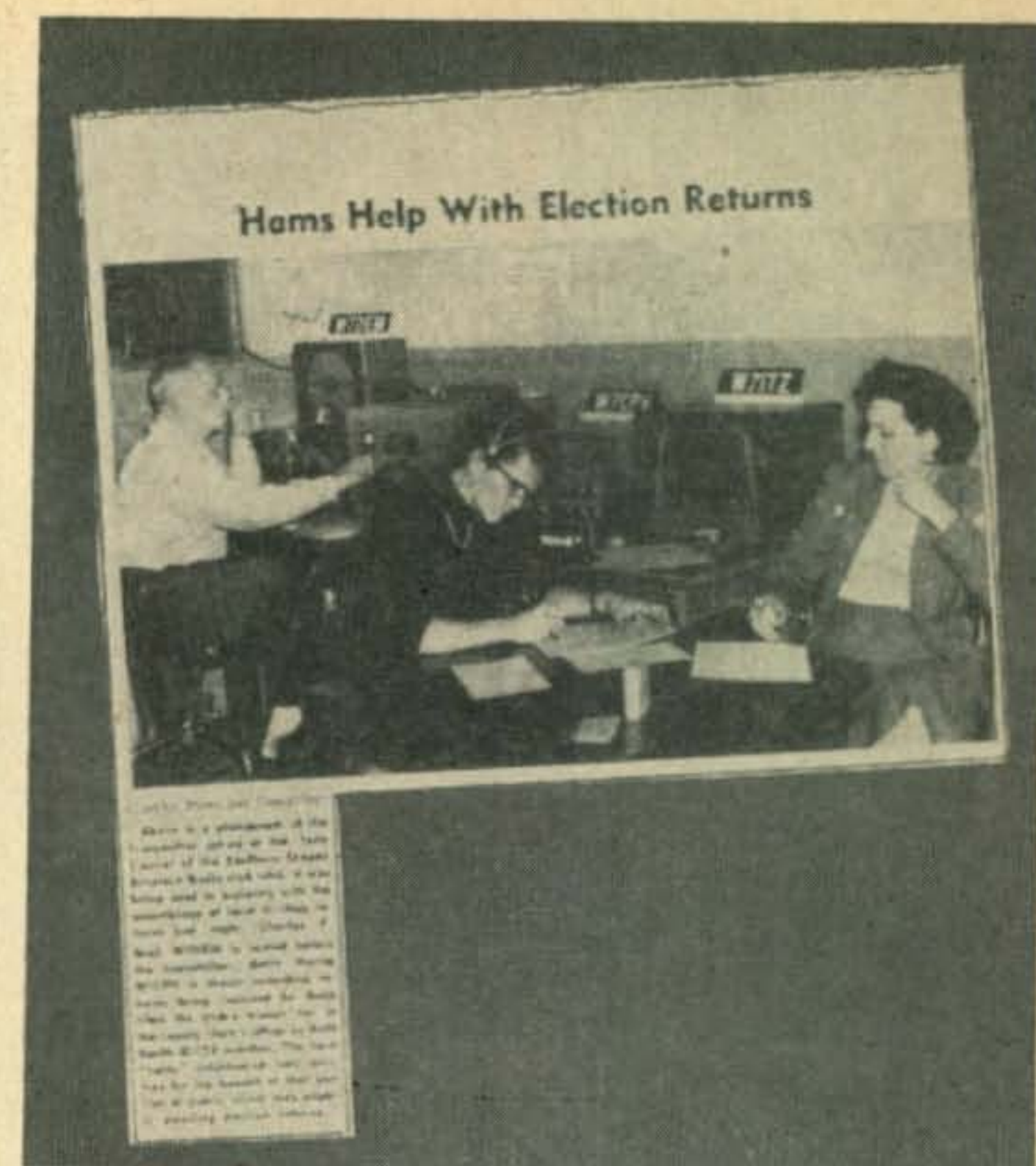
Phil Heydenburk, W7ZQM
Perc Booth, W7FTA

Southern Oregon Radio Club
2000 Dowell Road
Grants Pass, Oregon

Is your local amateur club one that has emergency powered equipment, portable stations and mobiles ready to serve in the public need on short notice? But perhaps in your location, such things as floods, fires, and local disasters seldom happen on a scale large enough to warrant amateur participation. Finding club projects is always subject for much discussion among club members. Seldom does the general public get a chance to hear much about ham-radio except in emergency work when commercial communications fail, and then often our work is buried deep beneath the news of disaster and does not receive the attention it deserves. To find a project which will be of public service and which will enable the public to familiarize itself with amateur radio under favorable circumstances, and still get some good publicity deserves some thoughtful consideration. This is what Southern Oregon Radio Club of Grants Pass, Oregon set out to do when it volunteered its services in covering the November 6th general election returns in Grants Pass and Josephine County.

Whether or not to undertake such a project was discussed at club meetings for months before the final decision. The first step was to contact the press, to see whether they could make use of amateur communications on the election. The Grants Pass Daily Courier, one of the local newspapers, accepted the offer with gratitude, explaining that because of increased telephone traffic during early reporting hours, communication of election results is a slow process, and that it also takes a lot of manpower to gather and assemble results from the fifty-two precincts scattered through a county thirty miles long and twenty miles wide.

After the initial contact with the press, the next job was to line up and assign available equipment. A fixed station was scheduled for the newspaper, and one for the County Court-



house. Election data was to be gathered by five mobiles working on 75 meter phone, who would go to the polling places to obtain up-to-the-minute "spot checks" and relay them to the newspaper, where the tabulations would be available to the local broadcast station and commercial news-wire services. In order to be sure that counting boards would make information available, all participants would be given identification cards signed by the County Clerk, requesting the boards to furnish early returns for press and radio.

While waiting for the polls to close at 8:00 p.m., the club members received a last minute briefing by the newspaper's editor, as to where

[Continued on page 112]

At Republican headquarters—WN7DXY Bob Wallace's receiving set-up intercepts mobile reports, as they are radioed to the newspaper. Copying reports, (seated left) Dick Walker and John Day WN7DXS (seated right). Standing, (rear left) Perc Booth W7FTA, and Phil Heydenburk W7ZQM, (rear right) check reports before they are turned over to precinct workers for posting.



SURPLUS

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The BC-1335 appears to be one of the few pieces of equipment which the ham can buy and use without *any* conversion work. By plugging in the proper crystal the unit may be used on the 11 meter band for FM and with a different crystal and only one resistor change 10 meter NBFM is yours. Nothing else need be touched. With a standard ten-meter whip and a T-17 microphone you can go mobile—if you own a car.

The BC-1335 is a low power, 18 tube FM transmitter-receiver, operating in the frequency range of 27.0 to 38.9 mc. Although rated at only 1.5 watts output, it can be loaded up to as much as 3 or 4 watts output with little effort. Operating and alignment instructions are permanently attached to one cover together with a full schematic and parts list. The channels used is the frequency in 100 kc steps (i.e. 270 is 27.0 mc).

Probably the biggest advantage of this gear is the ability to work from either six or twelve volts—merely by changing a switch position and the pin of the power connector to which we apply our power. This is very useful in moving equipment from one vehicle to another.

Two completely independent preset channels are provided and each can be selected by a front panel switch. This switch changes the crystal and causes the rf coils to be substituted for one another—thereby changing the channel.

Present plans include future information on the conversion of this rig to six meters and to AM, but for now let's get it on the air.

The receiver and transmitter are both crystal controlled by one crystal. This sounds unusual, and contrary to what we normally expect in a superhet type receiver, but this is an FM set and that makes the difference. The tubes are

all of the battery operated type with a 1L4 (V-6) as the first rf of the receiver followed by a second rf stage (V-7) also a 1L4, and then a 1R5 mixer (V-8). Three more 1L4's (V-9, 10, 11) comprise a 4-3 mc i-f amplifier and then $\frac{1}{2}$ of a 3A5(V-13) and a 1A3(V-R) form the discriminator, from which the audio is applied to the other half of the V-13 as an audio output tube. Two output impedance levels are available, 250 ohms and 4000 ohms.

A 3Q4 (V-15) acts as a crystal oscillator and a 1L4 acts as a multiplier and feeds this to our 1R5 mixer (V-8). No antenna relay is employed, the receiver being used for transmitter oscillator correction and to provide a side-tone on transmit. The transmitter is energized by applying power to the filaments by means of the push to talk switch of the microphone.

The dc output of the discriminator is zero when the transmitter is exactly on frequency, but slightly positive if higher in frequency and slightly negative if lower in frequency. In other words we have an AFC system merely by applying this voltage (if any) to the reactance tube (V-5) a 3Q4, which serves to control the transmitter oscillator to produce FM. The T-17 carbon microphone is our audio input and is coupled to the reactance tube (V-5) by a transformer. An R-C network is used for the required pre-emphasis in an FM transmitter. Figure 2 is a complete schematic of the BC-1335.

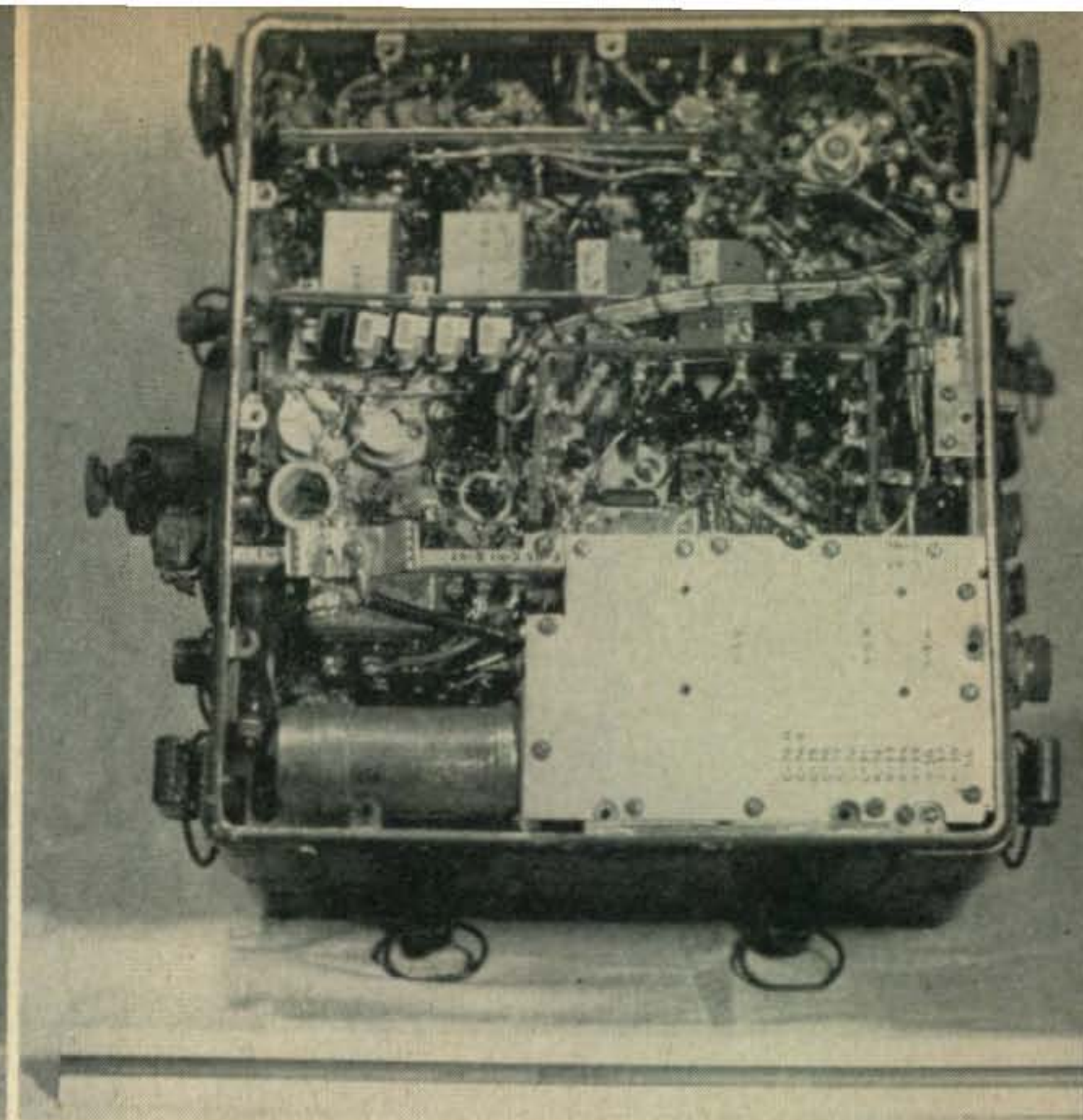
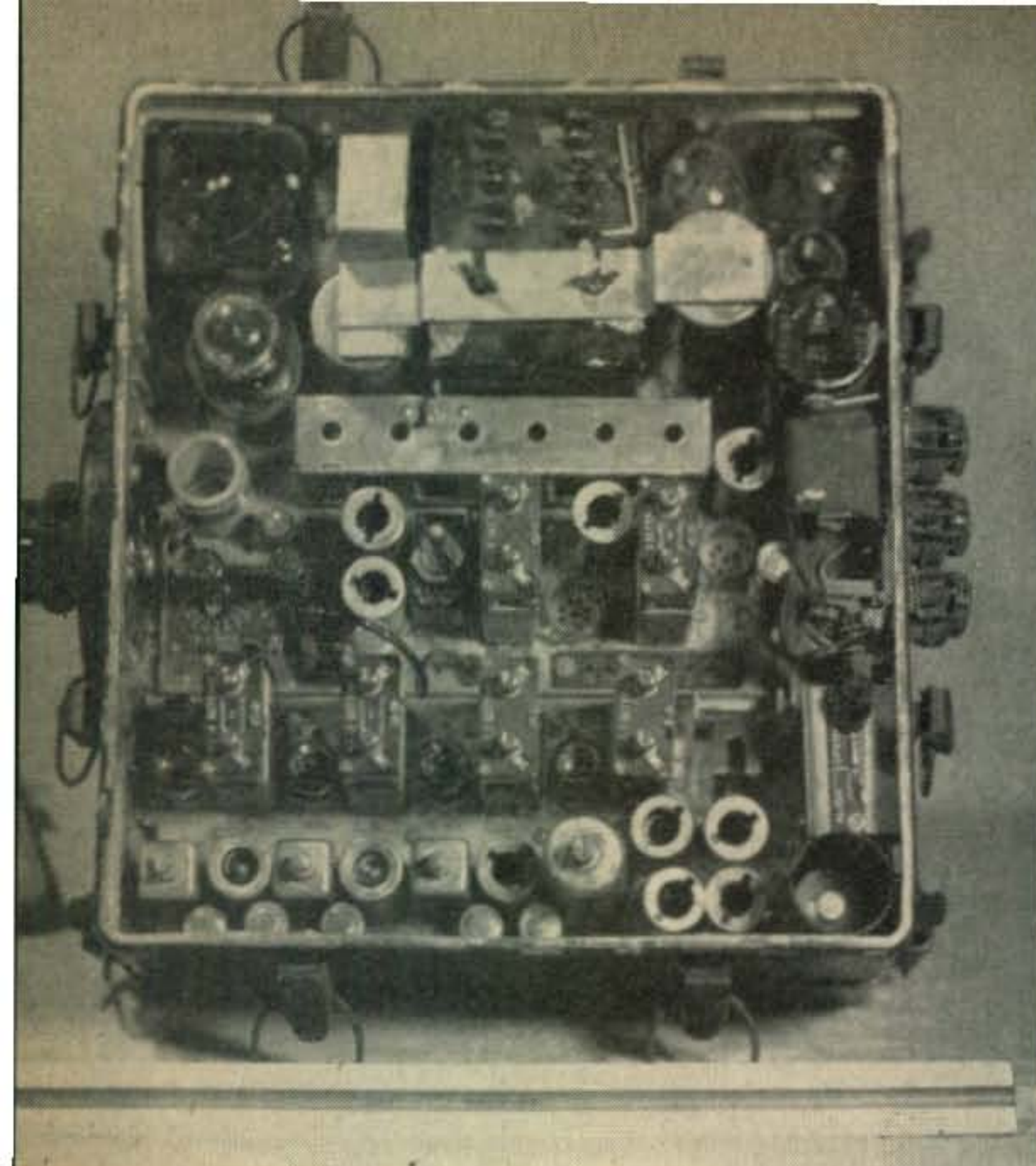
The level of dc bias applied to the reactance tube from the discriminator determines the frequency of the oscillator, V4(3A5), the frequency is also varied by the modulating signal). The doubler V-3(3A5) then drives the push-pull final which operates straight through neutralization is accomplished by C-6 and C-7.

A fairly complicated filament circuit is used, primarily due to fact that the input can be six or twelve volts and that filamentary type tubes are employed.

The microphone voltage is tapped off of the filament line. Microphone current passes through the transformer as well as R-10 (330 ohms), which controls the deviation of the modulation. By replacing this with a 2200 ohm resistor we will have just the right index of modulation required for NBFM compliance.

The power supply is voltage regulated for those circuits requiring this sort of voltage stability. The receiver supply is 90 volts while the transmitter is operated at 125 volts.

A unique alignment procedure is employed using the equipment as its own test set. A built-in tuning eye, together with a probe and a series of test points are all that is needed, so let's start aligning. First, of course, select the frequency you wish to transmit on, say 29.4. Since our i-f is 4.3 mc, our local oscillator must be set at the difference frequency, or 25.1 mc. A crystal of 6275 kc is plugged into the crystal socket for the channel desired, say "A".



Top and bottom views, or vice-versa

Now refer to the tuning chart and set all seven "A" knobs to the appropriate settings given in this table. (The tuning chart is part of one cover). We should be practically on frequency, but will require a little touching-up and peaking—hence the use of the "eye" tube and probe.

Turn the volume control knob to energize the equipment (with the proper voltage applied to the power connected and the 6-12 volt switch set properly). Plug the test probe into pin 1 on the test strip. The volume control controls the closing of the eye tube and should be set to just close the eye. Figure 3 shows the proper indication at each test point. The alignment switch must be in the proper position. Four bias cells of 1.25 volts each are located at the bottom of the chassis for use as a reference voltage for the tuning eye and should be in good condition making good contact. When the probe is in pin 5B of the terminal strip the eye should just be closed. The most critical adjustment depends upon this setting—that is, the transmitter oscillator frequency. If out of adjustment, the AFC system cannot correct for its error, and you'll be off frequency. This adjustment is not difficult, however. Adjust one channel at a time by setting the eye to just close when in pin 5B and with the probe then in 5C adjust setting 5 so the eye just closes. Several positions will be found for setting 5 that will cause the eye to blink, but the one nearest the calibration setting is the correct one. After the settings are complete, and the antenna current indicator lamps are peaked and the transmitter loaded, you are ready to go. Proper connections, mounting and installation should not be overlooked. The

fact that provisions for mounting by means of threaded inserts welded to the case should be a great aid to any installation. The whip mount which allows a simple truck mounting of the antenna is fitted with an internal base loading coil. A coaxial output is also available. Although we have not tried it, it appears that a standard BC antenna should load up nicely with this equipment.

The low drain of 6 amperes at six volts and $3\frac{1}{2}$ at twelve volts makes for a good piece of portable gear as well. While we managed to locate one copy, instruction books are hard to come by. They are not available through the U.S. Government Printing Office nor through the Signal Corps, this equipment now being considered obsolete.

73, Ken, W2HDM

Fig 3 Table of settings and test prod positions for adjustment of the BC-1335

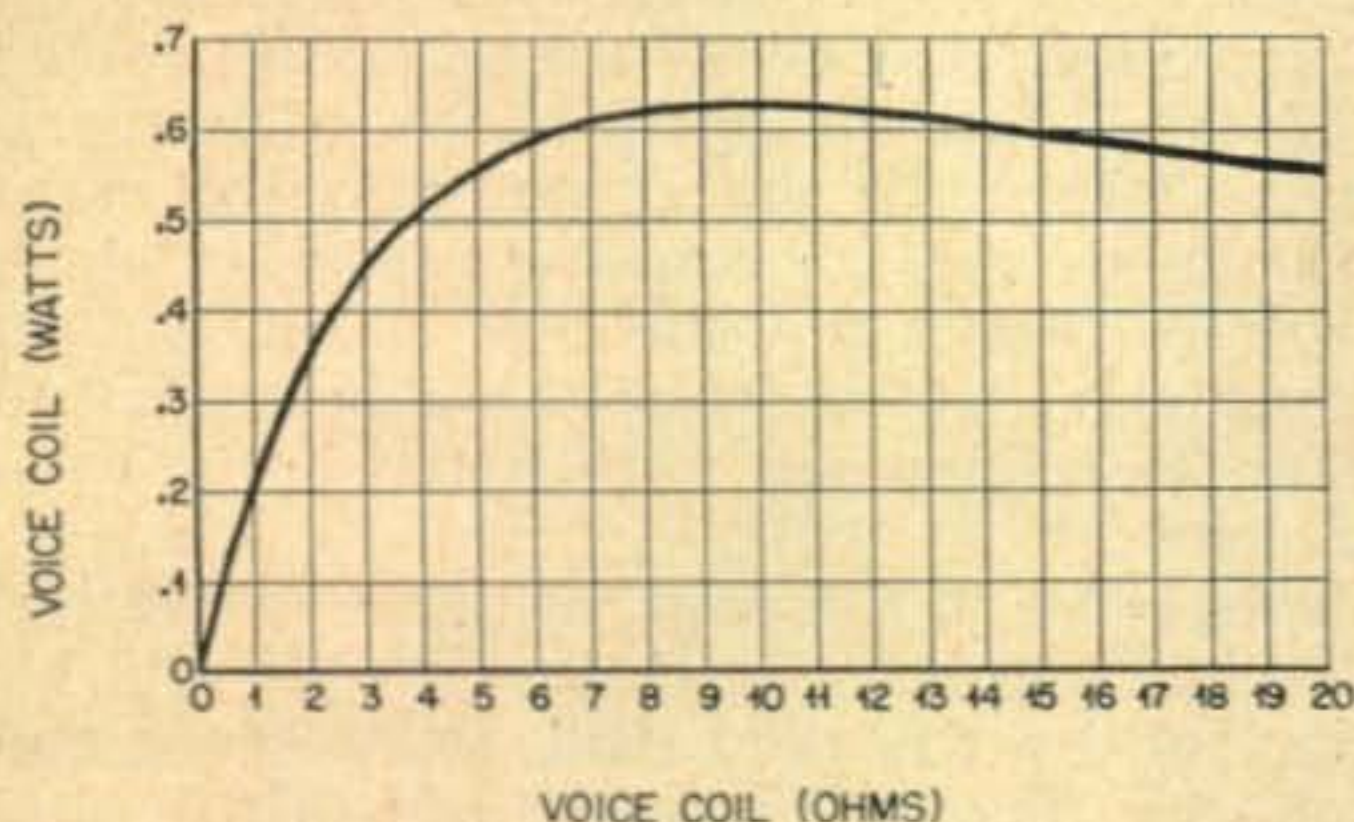
Setting	Function	Test Point	Adjustment	Note
1	Crystal Oscillator Plate	1	Max. Eye Closure	
2	Doubler Plate	2	Max. Eye Closure	
3	Receiver Mixer Grid		Max. Head-set Noise	
4	Receiver i-f		Max. Head-set Noise	
5	Oscillator Tank	5C	Max. Eye Closure	1
6	Doubler Plate	6	Max. Eye Closure	2
7	P.A. Plate		Max. Head-set Noise	

Note:

1. Several closure will be noted, but only the one nearest the pre-set setting will be correct. This should also be the maximum closure of the eye.
2. Adjust volume control so as to obtain sensitivity.

This short article shows just why it is that when the impedance of the input and the output match then there is a maximum of power transferred and the best results are obtained from—Say, a loudspeaker. Somehow this important factor is not explained very well in most articles on hi-fi as well as loudspeaker installations and this frequently results in very unsatisfactory installations.

the Impedance Match



George P. Pearce

1809 Richmond Drive, N.E.
Albuquerque, New Mexico

Why should the impedance of the output transformer secondary match the voice coil impedance?

Answer: *in order to get the best volume from a speaker or maximum results from any other electronic circuit where an impedance match is required.* In the first place an impedance match is generally for the purpose of transferring the maximum power to another circuit. But again, why does it happen that the maximum power in the connected circuit is developed when the two impedances just match? Let's find out: Suppose, for example that there is an audio transformer and across the secondary of this transformer there is developed 5 volts and the impedance of the winding is 10 ohms. We wish to connect this output to the voice coil of a loud speaker. What should be the impedance of the voice coil to receive the most power from the transformer secondary?

Without going into a lot of theory let us calculate the wattage a voice coil of 2 ohms impedance would receive: To start with we have 5 volts generated in the transformer secondary and we have a total of 10 ohms plus 2 ohms or a total impedance of 12 ohms in the circuit. The 5 volts across 12 ohms will cause $5/12$ or 0.416 amperes to circulate which, of course, will be the flow of current in the voice coil. A current of .416 amperes flowing through a resistance of 2 ohms gives a power in the circuit of $.416^2 \times 2$, or .347 watts; so much for a 2 ohm voice coil. Perhaps a coil with more turns in it would provide more power and a check on a 4 ohm coil shows it would give .511 watts. This is better but we do not know if this is the best so let us make a tabulation of a lot of various voice coils as follow:

Z_1	Z_2	Watts.
2	12	.347
4	14	.511
6	16	.586
8	18	.618
10	20	.625
12	22	.620
14	24	.607
16	26	.591
18	28	.573
20	30	.556

Where Z_1 is impedance of voice coil.

Where Z_2 is total impedance of circuit.

Formula

$$\text{Watts} = Z_1 \left(\frac{5}{Z_2} \right)^2$$

The greatest power transfer is obviously when the impedance of the voice coil is 10 ohms, and now notice that this is the condition when the impedance of the output circuit is matched by the impedance of the input circuit of the voice coil, that is, they are both 10 ohms and this is called the impedance match—for the output and the input both "see" the same impedance.

A plot of the above tabulation is shown and the match doesn't have to be perfect as a little mismatch on either side of the exact figure won't change the wattage seriously, but the exact match should be aimed for. ■

HAM CLINIC

Charles J. Schauers, W6QLV

1461 38th Avenue
San Francisco 22, California

As a new technical service to CQ readers, HAM CLINIC is dedicated to assisting brother hams with their technical problems and to provide them with information not readily obtainable from other sources.

The idea for the column was conceived some months ago by the writer and our Editor because it was felt that there was a distinct need for such a service.

Not everyone asked for technical assistance has the time, inclination or reference sources to provide the answers to questions submitted by those in need of help. As in the case of some manufacturers, no special departments exist to answer technical correspondence not relative to the products they sell and distribute. Consulting service regardless of the kind always costs money and time. However, through HAM CLINIC you can have your questions answered for the cost of a self-addressed stamped envelope or card.

Questions received that are of general interest to hamdom at large will be answered in the column. But personal replies will be made in every case.

Sufficient background or environmental information should accompany questions so that complete answers may be given. Most questions will be answered within two days of receipt. However, questions requiring lengthy research may take as long as two weeks.

If the question you ask cannot be answered with one typewritten page you may be referred to sources known to be available to you. But in any case you will never be left "up in the air."

Please, in every case include a stamped self-addressed envelope or card with your question and address your communications to HAM CLINIC in care of CQ at 300 West 43rd St. New York 36, N. Y.

Three senior engineers who are practicing hams with a grand total of nearly 65 years in amateur radio and two experienced practical hams with over 30 years in the hobby have volunteered to assist the writer in answering the real tough questions.

An extensive technical library is available and will enable us to back up answers with carefully prepared references. However, none of us are infallible and know the answers to all questions without research and study. After all, radio-electronics has advanced so rapidly during the last few years that a "good" answer today may be a "poor" one tomorrow.

Although limited to amateur radio, HAM CLINIC will welcome questions not in amateur radio but closely related to the hobby.

From time to time the column will carry brief technical book reviews; commercial news of interest to the amateur; technical items; twists and techniques; observations of the day and items not usually covered in other departments of CQ. But the emphasis will be on answering your questions and assisting you to obtain greater enjoyment out of our mutual hobby—ham radio. So send in your questions, we are at your service!

Observations of the Day

It has been estimated that \$30,000,000 will be spent by radio amateurs in 1958 for parts and ham equipment. This is a lot of money anyway you look at it! But there are still too many manufacturers who do not advertise widely enough or well enough to give the radio amateur a full technical picture of his product. A case in point is a friend of mine who recently purchased a receiver made by a well known and very reputable manufacturer. After taking the set home and bragging about its performance to friends he found out that the same manufacturer recently released a receiver which supersedes technically the one he purchased. He was angry for he would have been glad to pay for the refinements to be found in the newest receiver.

So we come to the point of this observation: the manufacturer who learns to design his equipment so that technical refinements can be added to the equipment he has already sold will have a jump on competitors. If he tells his advertising story well technically and timely enough he will make friends and not lose customers. Many amateurs cannot afford new equipment but are willing to pay for kits to bring their old equipment up-to-date. Of course there is an argument for not doing it this way—an argument in manufacturing economics. But the average amateur sooner or later buys his share of new equipment if it fills his need. New sales to the ever increasing numbers of new hams will make up for so-called new sales losses if refinement kits are made available. Too, there will be a profit on the kits.

Wayne Green, our Editor pointed out to me the other day as he has at so many radio clubs throughout the U.S., that the amateur has a lot better chance of coming up with remarkable inventions than the best research labs since he can afford to take a gamble on impossible things, while the commercial labs must work only on things that they know have more than half a chance of success.

While working in my own ham lab I have often wondered if I would ever run onto anything of unusual significance. I am happy to report that I have. To me "the thing" looks patentable. However I will not know this until a patent search has been made in Washington.

When I look back at the hours I spent trying to make "the gadget" work I can see the wisdom of W2NSD's words. No research lab would have tolerated the dilly-dallying with which I approached the problem. Perhaps they might have been able to take a few short-cuts unknown to me but one thing I know—I have learned as Edison did, failures are not really failures but steps to greater knowledge.

Don't let anyone belittle your basement research efforts. But pick a worthwhile project and don't spend time on something that will have little practical value; unless of course, you are a "long hair" steeped in pure math and logic and willing to spend endless hours on a project similar to finding out how a plant converts sunlight into energy or why an electron repels an electron.

Oh yes, what's "the gadget"? Simply an AFC system for SSB.

Twists and Techniques

If your receiver suddenly "gives up the ghost," lacks pep or its usual sensitivity, check your antenna coil. A hard blast of rf from your transmitter could have burned it up. To prevent this from happening in the future, connect a $\frac{1}{8}$ or $\frac{1}{4}$ watt neon bulb across antenna input and ground. When rf hits, the neon bulb fires and shorts the rf to ground. Its high resistance does not affect normal receiver operation, and it's good protection against a defective TR switch.

This idea was used in the 1936 series of SCR-183 aircraft radio receivers (BC-230) as well as the old reliable 274Ns. It's effective!

New Receiver

The Pierson KE-93 receiver now being manufactured by Automation Electronics Inc., 1500 West Verdugo Ave., Burbank, California has been service tested by the author in and out of his car.

Early difficulties in manufacture have been overcome and the receiver has a number of new refinements which will undoubtedly enable it to compete successfully with others already on the market.

Designed by Karl Pierson, the set has a very effective noise limiter; turret band switching for

low rf loss; outstanding frequency stability for in-motion operation (even with SSB); efficient squelch system; die cast cabinet construction; completely modularized and covering all ham bands as well as broadcast frequencies its sensitivity and selectivity leave little to be desired.

Checked on the bench with precision instruments it has a sensitivity of less than 1 microvolt and ran rings around a very well known home station receiver.

Any ham buying the KE-93 will certainly be buying expert craftsmanship as well as quality. The first 12 receivers recently exhibited at a gathering of West Coast hams were grabbed up.

Tech Book Reviews

The writer would appreciate suggestions as to books you would like to see reviewed in this column occasionally. Of course, we wish to review those books of interest to the radio amateur.

You are assured that the review will be objective and give you enough information to decide whether or not you want to obtain the book reviewed.

Question of the Month

Every month we will choose one question which we believe to be a very important or outstanding, well thought out question. The ham who submits it can rest assured that we acknowledged his thoughtfulness in that it is published in this section. To be the question of the month the query must be on a subject of wide general interest and appeal to the majority of hamdom's "deep thinkers."

Suggestions

I would appreciate your constructive suggestions. Although not in the "Mr. Fix-it" class I'll refer your gripes and legitimate complaints to those who may be in a position to do something about them.

Letters without names or addresses will be referred to old File #13 (waste basket) without being read.

Opinions and statements expressed by the writer are his own and do not necessarily carry the indorsement of CQ or any other agency, governmental or civilian.

Humor on rf

If you have something humorous which would appeal to brother hams, why send it in. A good laugh can clear the air more quickly than CONELRAD.

So, hope you enjoy this column—participate in it yourself and by so doing you will help others.

We ARE at your service.

73, Chuck, W6QLV

S
B

Bob Adams, W3SW

919 McCeney Road,
Silver Spring, Md.

A new leader shows the way in the Countries Worked race; Harry, W2JXH with 89. Harry has 78 confirmed, including 18 of the Pacific Islands. It was necessary to stop the list at 75, as there are sixty-seven stations with more than 60 worked at this time.

It has been suggested that we revise the list to show the number of countries confirmed as well as those worked, so starting with next month's column we will inaugurate this practice. Only those calls will be listed in which the operators have furnished the necessary information.

The first National Side Band Dinner, held in Chicago during the Ninth National Amateur Radio Convention was a huge success. There were approximately 600 in attendance, and with Fred Schnell, W4CF as toastmaster, everything ran smoothly.

Plans are already being formulated for the next Side Band Dinner in New York. This one will be sponsored by the "Single Side Band Amateur Radio Association, with Harry Whiting, W2JXH, Chairman of the committee. Mort, W2KR will be toast-master. The affair will be held in the Grand Ball-room of the Hotel New Yorker on March 25th, 1958 during the Annual I.R.E. Convention. Tickets will be \$7.50. Eight hundred are expected to attend.

Thru Lloyd, W6DOB, we learn that Herb Hoover, Jr., K6EV will be active on 10,15 and 20 SB using a new KWS-1.

W6HS, Mert operated portable from Tahiti, Fiji, Samoa etc. on the SS Monterey and worked 20 countries and 27 States enroute.

Jim, KH6KS, using the small 40 watt portable SB rig of W6UOU operated as KH6KS/-KB6 on Baker Island and gave many of the boys a new country. Jim expects to operate from other remote spots soon.

The FP8AR d-Expedition was a great success, with nearly 2000 contacts being made. A Halicrafters HT-30 was used as a complete



Raoul of K2ADS



Phil of F7AC



Bob of W4VEI/KL7 below is K4BGU



story of the trip will appear soon.

Mickey, W8YIN has worked 46 countries since March 15 using 100 watts. His choice ones include MP4KAC, SVØWE, AP2BP and VK1BP running 3 watts in Camberra.

We were shocked to learn from Lloyd, W9MWK of the passing of John Curd, W9EHL who was active on all bands, SB. His signal will be missed.

The gang around Pittsburgh, Penna., will hold a SB Dinner October 26 at the Parkway Steak House on Route 22 near Monroeville. This is an annual affair and all are welcome.

Walt, K6GMA worked AP2BP and VS4JJ to reach 82. He has 67 confirmed. Phil, F7AC is up to 71 and 52 confirmations.

From Charlie, F7AF we learn that ET3GB is running 30 watts but is constructing a new linear. AP2BP is building a new 4-250A amplifier and will be heard on 10 and 15 meters. Charlie is up to 81.

Paul, VQ4EO is getting ready for his safari across northern Africa and has received permission to operate SB in most of the countries listed in last month's column. This d-expedition could mean the DX Century goal, for many of us so we hope Paul is successful in obtaining the necessary gear. The starting date will probably be in January.

The "Malayan Radio Amateur" published by the Malayan Amateur Radio Transmitter's Society, has been printing many interesting SB technical papers and is creating interest in SB throughout Malaya, Singapore, British North Borneo, Brunei, Sarawak and Christmas Island, where amateurs are allowed full membership. Associate membership, is open to all licensed amateurs by writing to VS2DB.

KA5ZS has "secured" and Zane, is now back in the States operating as W6UWL. Krist of KA5MC has also returned Stateside and signs W6KTE. KA5MC will continue to operate as a club station. QSLs were sent for all previous contacts.

Ted, W5YMX/MM reports that VP4TE is building a SB exciter in Trinidad, for his linear but is having considerable difficulty finding the proper parts in Port-Au-Spain. Hope he makes it as this will be country number 100 with SB activity. Who has a spare exciter?

WØQVZ, Bob reports that Ken, HS1A will be on 15 meters on Sundays around 1400 GMT. His frequency will be 21,423 kc using a 20A and 837's grounded grid with 150 watts PEP. QSL via W6FKH.

Mirko, YU1AD worked UA1DZ, CR9AH, FP8AR, YA1AA and VS4JT to bring his score to 67. He is puzzled by the poor ratio of QSLs received to those sent. YU1AD has sent 732 cards and only received 367. This is strange when you consider that YU1AD is the only SB in his country. Mirko, who is definitely not a rich man, will "pay for a month's vacation on the Adriatic seaside to any one who receives a QSL from YU1AD before sending

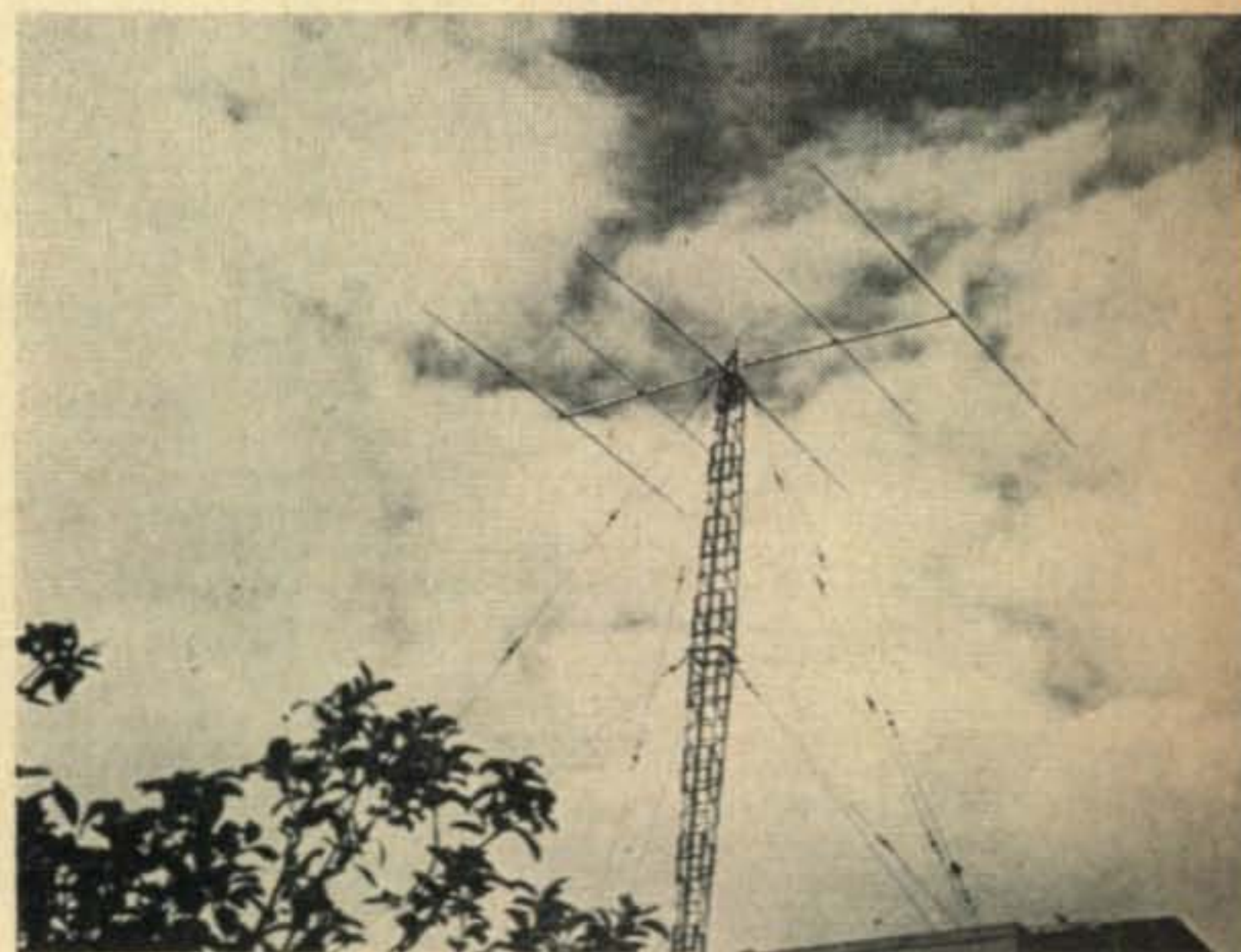
[Continued on page 113]



Ken of W9OKB



Marv of TF2WBU



W3DZZ Beam and Station at EA2CA



Contest Calendar

Frank Anzalone, W1WY

14 Sherwood Road,
Stamford, Conn.

Oct. 1-Dec. 31	OV Munich
Nov. 30-Dec. 2	CQ W.W. DX CW
December 8	CCRC DX CW
January 3-5	DARC WAEDC CW
January 18-19	CQ 11 Meter
January 25-26	BERU
April 4-6	DARC WAEDC Phone

OV Munich

This marathon ends this month. QSL cards are requested for all contacts and logs should be sent not later than January 31, 1958. See Oct. issue.

CQ W.W. DX

The Phone contest is now past history and the way the logs are rolling last year's record returns will easily be exceeded. From the "scuttlebutt" on the air, the CW contest promises to break not only last year's record returns but also any contest ever held. W3ASK has promised us excellent conditions so let the logs roll in.

The anticipated DX expedition from a new European country during the CW section has still not been officially confirmed so must still remain nameless.

CCRC DX

This is a new one and only lasts 12 hours, 00:00 GMT to 12:00 GMT on December 8th. All details in last month's issue.

DARC WAEDC

This is the third running on the WAE contest by the DARC. This year's version has been streamlined to only one week for each section (good idea) and bonus points have been eliminated.

Contest Period:

CW 1800 GMT Jan. 3, 1958 to 2400 GMT Jan. 5, 1958.

Phone 1800 GMT Apr. 4, 1958 to 2400 GMT Apr. 6, 1958.

Frequencies:

CW—3.5, 7, 14, 21, 28 mc.

Phone—14, 21 and 28 mc.

Serial Numbers:

- Serial numbers will be exchanged between European stations and amateurs located outside the European continent.
- Numbers will consist of the usual RS or RST report plus a progressive 3 digit number starting with 001, which will increase progressively even tho operation is conducted on different bands.

Scoring:

- Each completed QSO counts ONE point, except on 3.5 mc where it will count TWO points.
- A station may be worked only once per band.
- Tone reports must be not less than a T7.

Multiplier:

- Non European stations will credit of ONE point for each European country worked on each band. The WAE Country List will be the guide.
- European stations will get credit of ONE point for each country outside the European continent worked on each band. In addition, each call area of the following country will also count as ONE in the multiplier. W/K, CE, JA, PY, VE/VO, VK, ZL and ZS.
- Final score will be the QSO points, plus the QTC points in the CW portion, multiplied by the sum of the country points.

QTC Traffic:

A QTC can be transmitted only from a non-European station to a European station and only in the CW portion of the contest. The general idea is, that after a number of European stations have been worked, a list of the stations worked can be sent back during a later QSO with another station, and a credit of ONE point can be claimed for each station reported.

- A QTC contains the time, call and QSO number. For example—1200/DL7AA/113. Which means you worked DL7AA at 1200 GMT and received his number 113.
- A QSO can only be reported once, and of course not back to the same station, even tho the contact was made on another band.
- A maximum of 10 QTC's per station are allowed.
- Keep a uniform list of QTC's sent. Example: QTC 3/5. This means that this is the third series of QTC's being sent by the originator, and that five QSO's are being reported.

Classifications:

Only single operator station are acknowledged. If more than one operator is participating from a Club Station, only his individual score should be submitted, under his personal call.

Awards:

A certificate to the highest scorer in each country or country/district. Also awards will be made to each continental leader. And in case of sufficient participation, 2nd and 3rd place awards will be considered.

It is strongly recommended that contestants write to the DARC for official log forms. Include 1 IRC for regular mail or 5 IRCs for air mail. Indicate the number of sheets needed.



Logs must be mailed not later than Feb. 28th, 1958 for CW and May 31st, 1958 for Phone. Sign the usual declaration and mail to:

D A R C - DX Bureau
Fuchsienweg 51
Berlin - Rudow, Germany

CQ 11 Meter

Because of the success of the 11 Meter Party last summer, it was decided to make a contest of it.

Time:

13:00 GMT January 18, 1958 to 05:00 GMT January 20, 1958.

Scoring:

Work as many stations as possible of course. USA as well as foreign countries. ONE point for each QSO whether stateside or DX. Total number of QSOs multiplied by the total number of countries and states. Phone logs will be judged separately from CW logs.

Serial Numbers:

RS or RST report plus State or Country. Example: 59 Idaho (Phone) — 579 New Zealand (CW).

Awards:

Certificates for leaders in each Country and each State. A couple of trophies have also been promised. So it will be worth while to take a crack at this activity fellows.

Send your logs not to CQ but to:

Eleven Meter Contest

P.O. Box 584

Ho Ho Kus, N. J.

[continued on page 106]

Results WAEDC 1956/57 Contest

Continental Winners CW

Class A		Class B	
Europe	DLIEE 39,780	DL1DX	241,531
No. America	W8CED 13,790	W2WZ	185,954
So. America	PY4A0 2,484	PY2OE	6,600
Africa	—	CR6AI	72,576
Asia	—	OD5LX	44,472
Oceania	KH6IJ 1,300	VK2GW	15,129

Phone

Europe	DL7AA 3,500	DL1KB	47,808
N. America	W2WZ 182	W1FZ	6,384
S. America	HK3PG 112	PY4RJ	3,751
Africa	CR6DS 60		

Class A—One band only. Class B—Two or more bands.

Phone Certificate Winners

Class A		Class B	
DL7AA	3,500	DL1KB	47,808
OK1MB	2,337	OE5CK	18,630
OH5QN	1,029	OZ3TH	3,737
OZ3SK	112	ON4DH	3,465
SP5KAB	450	F8XP	1,122
W2WZ	182	SM3BIZ	875
W8BSR	15	PA0VB	390
W0WMA	4	EA4EP	375
HK3PG	112	W1FZ	6,384
CR7DS	60	W8NWO	4,680
		PY4RJ	3,751
		CX3BH	1,254

Class A CW Certificate Winners

Europe		No. America	
DLIEE	39,780	W1DFY	1,260
9S4CM	1,200	W2GJD	6,500
OH1TI	7,488	W3MDO	2,952
PA0VO	9,974	W4IV	319
OK1KKR	7,596	W5QVZ	336
LA5IC	2,750	W6NNV	1,729
SM5IZ	18,278	W8CED	13,790
SP2CJ	4,650	W9NDN	3,620
EA4FZ	444	VE1ZL	1,254

F9CI	260	VE2AKF	128
ON4SH	2,774	VE3RN	230
OE4SH	928	VE7GI	3,672
OZ3GW	56	KP4DH	494
ZB2Q	418	CO2HB	396
HB9DB	12	XE1PJ	190

Oceania

KH6IJ	1,300	FL8AB	12
ZL4CK	490		
VK3XB	216		
VK7CH	10		

Africa

So. America

PY4A0	2,484
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Class B CW Certificate Winners

Europe

DL1DX	241,531	W1JYH	91,926
9S4AX	12,852	W2WZ	189,954
OK1FF	136,969	W3FYS	87,416
F3AT	61,600	W4TM	20,075
OH4NT	55,752	W5KC	26,963
G3EYN	53,622	W6YMD	45,110
EA1AB	62,912	W7PQE	13,450
SM7MS	41,406	W8RQ	82,984
HB9MO	33,110	W9ZTD	6,845
PA0VB	25,172	W0IUB	1,606
ON4HB	25,024	VE1EK	17,003
I1IT	17,400	VE2AVC	1,760
OE3VP	17,199	VE3IR	18,564
LA2Q	11,730	VE6VK	11,448
CTICO	14,064	VE7ZM	1,386
EI7D	3,146	VO2NA	1,974
GW3HJR	1,363	KP4JE	2,660
HA5BI	3,100		
I1BLT/T	21,050		
LZ1KPZ	21,714		
LX2GH	1,342		
OZ4IM	9,272		
UC2AA	33,534		
TF3AB	16,125		
YU3OS	7,298		
YO3RF	6,708		
OY7MZ	286		

No. America

So. America

PY2OE	6,600
LU6DJX	416

Asia

OD5LX	44,472
3W8AA	35,295
4X4BX	15,123
JA1CR	952

Africa

CR6AI	72,576
FA9VJ	5,982

Oceania

VK2GW	15,129
VK4FJ	1,710
ZL1MQ	1,180
ZL2GS	8,388
ZL4GA	3,672



Sam Harris, W1FZJ

P. O. Box 2502, Medfield, Mass.

Every now and then somebody does something outstanding and nobody finds out about it. Now this doesn't cause much worry for the guys that don't know about it because, of course, they don't know about it. But the guy it happens to has got a real problem. Take this fella I know down in Rhode Island. He's been operating on VHF since before they had novices. As a matter of fact, Ol' Casey was when they were still using vertical antennas. His career as a VHF'er is sprinkled with yeoman like deeds. Half the guys who worked Rhode Island for the first time on any VHF band had Casey on the other end. (Sometimes I've heard he even QSL'ed). When a good converter was a hard thing to come by, the guy to see was (and still is) W1KCS. When a contest rolls around you can be sure of a Rhode Island contact with W1KCS. He wins them too. Takes his section most every time. Never quite managed to get to the top nationally though. That is, not until last June. What? You didn't know Ol' Casey was top single operator last June? Well that's the whole point of this story. Neither did I. And, as a matter of fact, neither did Casey. But he was. As a matter of fact his score topped the Happy Old Yokel by a couple of hundred points.

The contest is history and water's flowing under a different bridge, but I hope you will all remember that among his other accomplishments Ol' Casey whupped us all in the June VHF contest, 1957 variety.

Six Meters

Now that everybody has reconverted their six-meter convertors back to 50 mc from 40.002 mc, and the sparkle of "Sputnik" has dimmed, it would behoove one to start a-diggin' for some of the trans-continental and across-the-pond dx that's about to start coming in. Did I say "coming in"—well Helen broke the ice with a couple of W6's at noon on October 20th so it won't be long now. European T.V. is already coming in and, by the time you read this, European stations should be old hat on

six. EI2W on the Emerald Isle is *on* six at 50.016 daily from 0800 to 1200 EST and if you read his letter in the correspondence section of this column it should give you all the dope. There are other stations on six in Europe and it looks like cross-band won't be so necessary this fall and winter.

Africa is also well-represented with VQ4EU and VQ5GF on from 1700 to 1800 GMT, with VQ4EU on SSB. Finally convinced them that 52 mc was not the place to be, even if the QRM is non-existent, so they'll be down with us boys.

"This fall and winter should definitely see WAC worked on six from the North American continent provided some of those recalcitrant polar paths open to JA and the like.

The new antenna at W1HOY hasn't really gotten much of a workout yet, but it seems to be working about as expected. Helen's inhaler and exhaler is a thirty-two element rotary beam (4 high and 2 wide 4 element yagis spaced $\frac{1}{2}$ wave apart). It's a bit sharper than the old 24 element but at least it does go around. In fact, everything, tower and all, goes around. Helen and us peons here at the Rhododendron Swamp VHF Society sure would like any of you fellows out there in the wide-wide world who want schedules on six to drop a line to us and tell us a time and frequency. If Helen can't make it, one of us can keep it. Most of the ionospheric scatter skeds we've had have been cinches, provided the other guy had something on his end to make a reasonable noise with. Will take skeds with anybody in the world who wants one. Helen is already scheduling a VQ4 and VQ5 at 1300 EDST daily and, by the time you read this, she should have made it to Africa, she hopes.

Looks like old 48 in Massachusetts, W1VNH, finally made it. Harold finally got Delaware to listen when he was talking. So WAS on six is now in Massachusetts too.

0.05 Meters

It gives me great pleasure to inform you that on Saturday, October 12, 1957, a distance record was set in the 5650 mc band. The distance, 34 miles, was spanned by the equipment of W6VIX/6 and K6MBL, a technician (we aren't all at the lower end of 6!) from Strawberry Peak, north of San Bernardino to K6MBL's garage roof in south Pomona.

Signals at Strawberry Peak were reported at 5x8, and those received at Pomona 5x9.

The gear consisted of 30 mc IF strips with AFC at W6VIX/6's end, 6115 klystrons, pola-plexers (circular waveguide using cross-polarization for receiver-transmitter isolation), an eight foot parabola at W6VIX/6's end and a 30 inch parabola at K6MBL's end.

This probably marks the first amateur use of the 5650-5925 mc band. The old 31 mile record set in 1945 was in the old 5250-5650 mc band.

It is also noted that both participants are members of the San Bernardino Micro-Wave Society.

Members of the Micro-Wave Society now hold both ends of the records in the 3300, 5650 and 10,000 mc bands and are at one end of the 1215 and 2400 mc band records.

The National Convention—VHF Division

The windy city was sure crawling with VHF men from all over during the ARRL National Convention. John and Terry Landeck, W9WOK and XYL, sure did a bang-up job with the fellows of the Midwest VHF Club in producing a real fine VHF convention within a convention. Everybody was there from everywhere. A guy could drop prominent VHF calls for half an hour without covering all of them. Paul and D. B. Wilson W4HHK/W4UDQ were there with Paul giving a blow-by-blow description of his new 24 element beam for six meter IGY project. Ed Tilton held forth on VHF and Walt Bain, W4LTU, "The Florida Bolide", gave the boys a taste of recorded meteor signals from all over the nation. The whole Midwest VHF Club was there, some members coming from as far as Wisconsin, Tennessee, and Massachusetts. (Yep, Massachusetts.) All in all, it sure was a tremendous time. In fact the only VHF man not there was the guest of honor, W8KAY. Art received a cup (post-humously?) for being chosen the VHF Man-of-the-Year. Art's tireless and ubiquitous presence on the two-meter band has helped more than one VHF man to realize an opening was on. His very informative QST's are a veritable cornucopia of information. I'm sure that the award was well deserved and that his absence can be easily explained by the inevitable aurora during the convention (he planned it that way).

Syracuse VHF Round-Up

"We said it before and we will say it again." Words that someone made famous and which we've worn out by use in this column. Of course we're speaking of the "Syracuse VHF Round-Up." As usual it was a "Dilly". Lots of people, including interesting speakers, an

The "Baron", Ben Bissman (W8HXT) contesting or DXing to order.

Lou Breetz (W3KDZ) operating portable in the West Virginia section. Lou won the April contest for West Virginia on 50 mc.

In case you are looking for Delaware, here it is. Bill Brote, WN3JCT, Delaware section winner on 144 mc.

VHF trophies awarded at the Syracuse Round-Up. That big one went to W1MHL/1 for their efforts on Pack Monadnock. K2CEH/2 and cohorts got the other one.



incredible number of prizes, really delicious food, etc., etc.

Quebec was represented by VE2AOM and VE2FF. We had a chance to speak with both of these boys and found out that there are a number of boys in their area who about ready to get on six meters and let out with a loud howl down this-a-way. Ontario was represented by VE3BPR and others whom we were not fortunate enough to meet. By round-a-bout methods we found that Rae didn't have a subscription. BUT NOW HE DOES.

Ohio sent quite a few delegates. Johnny Remish, W8HRV, was there with his XYL Agnes, K8G—; Ed Radebaugh, W8OXS; Dave Bell, W8GUE (Practically old neighbors, all of them); amongst others.

Arriving from Pennsylvania were W3LZD, W3ARW, 3PMG and the gang from W3KX. Among the many attending from New England were W1HDQ and his XYL, Mildred; W1AZK, Don from New Hampshire; W1MMN and W1FTF from Vermont; dozens of people from Massachusetts showed up including: W1OOP, W1FOS, W1HUB, W1UVB, W1CRV, W1VNH, W1RFU, W1PYM, W1DDN and W1RUD. Gordon, W1OUN was the only Maniac there, and as far as we know there was no representative from Rhode Island.

Sorry we can't list everyone who attended the Round-Up 'cause they were, as usual, part of the cream of the VHF crop.

Once again, a special vote of thanks and congratulations to Charlie Sellwood, W2RHQ and associates for putting on a bang-up "DO".

Tarpon Springs, Florida. Dick Barry (K4DMB) comes through from that grand state with the following:

"Our local activity is all we've had for quite a spell. The last skip we caught was August 11th into Texas."

"Grid, W4GJO, has been working into South America on several evenings the early part of this month (October). He worked several LU's and CE's. He works signals we don't even hear." *Yep, that sounds like Grid.*

"On September 15th the Lake County VHF gang gave a picnic at Tavares, Florida, for all the VHFers of the state. I was not able to attend but hear that everyone had a good time. *They always do.* An International converter was given away as a prize. This will be an annual affair from now on."

"Sure would like to have a big opening into W1 land. Still looking for Vermont and New Hampshire." *Lots more boys on in both of those states now Dick. You have a much better chance.*

Gurdon, Arkansas From Arkansas (little heard from) Jay (W5JWL) writes concerning his aurora contacts, heard and worked:

"September 4, 1957—heard WØRYG, KØEMQ and W9LF. Lost W3RUE and worked W9AAG. September 13, 1957—heard W8KAY, W8IFX, W4HHK, W5RLI, WØTGC, KØDOK, WØQDH, W7SDJ, W2CXY. Worked W81FX. September 22, 23, 1957—heard—WØRAP. Worked W4AO, W3GPK, KØEMQ, W9AAG, WØIHD, W9ERC. Lost—W8PT."

"W4AO, 3GKP, KØEMQ and meteor scatter contact with W4LTU in August make total of eighteen states." *Three cheers Ray, keep it up and you'll soon be way up there in States Worked.*

Garfield, New Jersey A New Jerseyite (?), namely Bill Kardash (K2UCA) sez:

"I am very interested in getting on six meters. At present I have no rig for six but am trying to scrounge up something. I am purchasing an NC-300 with six meter converter near the end of October. I am selling my SX-99 and also a tecraft six meter converter. *Don't rush fellows, he's in the call-book. Just phone, write, wire or fly there to get it.* I will be using a four element beam sixty-five feet high. (On top of National Community Bank, next door to me!) *Nice neighbors you have, Bill.*"

"If there is no way to get the DX-100 on six, I'll be in the market for a rig with power supply, something not too expensive, forty dollar class."

I hope to take (and pass) my General soon, only have my technician at the present time. When this task is completed I will buck W20NV on two meters. Hope someone can help me with my problems!" *Good luck with the General Bill and see you soon on six and two meters.*

North Hollywood, California From way out there, far away to the west (of us) we have word from Eli (W6VGB).

"I have been reading your column since my novice days in Revere, Mass. when I was WN1FIJ. During my moving to California I continued reading same, also studying both my code and theory. *That's a good, good boy.* My theory prospered but code died, consequently my tech call W6VGB. When I get active I hope to spruce up my code and change the endorsement on my ticket to General."

"I am now in the process of rounding up some gear so I can get on six. Looking over the August '57 'CQ', I became most interested in the 32 element yagi and would really appreciate your advising me on constructing this beam. Also what would you advise for receiving and transmitting equipment? I would like to build a medium power transmitter and also a converter to connect to a ham band receiver. The receiver I have had good luck with is the SX71 which I had back in Revere."

"Any hints relative to procedure would be tremendously appreciated, and also any information about location of some six meter boys in my area." *Good luck to you in California Eli, and I'm sure that some of the boys will look you up. W6GB, 5712 Colfax Ave., North Hollywood, California.*

Albany, Georgia Ben (K4BLA) comes through from Georgia, this time via the post-office:

"There I was, all set for the big contest the 24th and 25th of August, had two receivers and guess what? Nary a signal was heard at this QTH. *Huh!* But boy oh boy, the 27th of August was a humdinger, heard you and Helen at W1HOY and called you but no answer. How come? *Must have been Sam at the mike, he never works DX—Signed, Helen. P.S. I'm not allowed to work it.—Signed—Sam.* Heard several Connecticut stations but couldn't hook up."

"Anyway, I've got a few of the fellows interested in six around here and maybe they'll get on soon. K4LOZ, K4KIV, K4LPG may soon be on six meters." *Thanks for the info Ben, always happy to receive it.*

Marion, Iowa Good old Johnny Dinter, (KØJJA) sends word from Iowa:

"I have really been having a circus out here. By that I mean that I arrived out here to work for Collins, December first last, and have had to drop my W2ZUW call with which I held forth in Western New York. After several years of trying, I had made thirty-seven states. Needless to say, I was rather reluctant to start over again, but anyway here are the results."

"Worked KØCHK on aurora March 10th of this year, and finally nailed WØWVR in North Dakota. Of course I worked a few stations in between and have had a lot of fun."

"Oh yes, I almost forgot. WØWVR was number forty-seven state and now all I need is Washington." *No wonder he's having a circus!*

"Outside of that, things have been rather quiet. George, KØEMQ, is still playing around on two meters, where I hope to join him shortly. There has been very slight activity on 220 mc., again with the possibility of growing activity this fall and winter." *Thanks Johnny, keep the information coming our way.*

Palos Verdes Estates, California (And whoever says that isn't a mouthful, just doesn't

know.) A few words from Tom Faherty, (K6QIP):

"Can't say that I haven't seen the 'Golden State' well represented in your column, but thought I'd squeeze my two cents in. *All two cents gratefully accepted.* I live down the hill from W6NLZ and whenever he comes on with his KWS-1, on either 20 or 2 meters, all you can copy here is my receiver's grunts and groans." *Know just what you mean Tom.*

"I am very interested in the propagation of SSB on 50 mc., and would appreciate comment from anyone who experience in this mode of communication."

"I have in my trading stock seven 2C43's and three 2C39A's, all HF triodes. If anyone is interested, please write; no reasonable offer refused." *Write to him, fellas, not me. His QTH—721 Via del Monte, Palos Verdes Estates, California.*

Calumet City, Illinois Lorraine Seymour (K9AZE), secretary of 'The Six Meter Club of Chicago' sends us this certificate information:

"Since my last letter to you, our club now has on hand, certificates for any station working ten members of the club and an additional CW certificate for any station working ten members of the club on CW." *The club seems to be coming along very nicely Lorraine, hope to hear more from you.*

Pensacola, Florida Eddie Collins (W4MS) sends us some family news from Florida.

"K4AGM (daughter) and I (W4MS) both worked LU9MA on six meters on September 5th at 0900 CST. Heard LU5AH but he was in QSO. LU9MA was twenty over nine here."

"Rig here is three element beam, twenty feet high; Ranger into 6n2. Crystal converter 75A4."

"W4MS—42 states—7 countries—2 continents K4AGM—thirty-five states—4 countries—2 continents." *Thanks for the dope, Ed. Short and sweet but very definitely to the point.*

Ponca City, Oklahoma Oklahoma represented this month by Arthur Ball (W5PZ):

"Just a few lines to report aurora signals heard here 9/4/57 from 2142 until 2315. Did not work any CW as my keying circuit was not right. Heard the following ten states and sixteen stations either all aurora reflection or with an aurora buzz. All sounded like a soft shoe dance on a sandy floor, no beat note at all. *That's a new description to us Art, but will probably help newcomers to VHF identify it better than any description I could give.* Local stations in Oklahoma had a definite reflected buzz echo with antenna pointed to the Northeast. Heard the following states: Arizona, Tennessee, Alabama, Illinois, Iowa, Missouri, Oklahoma, Nebraska, Mississippi, Indiana, and the following stations: W7ARR, W0RAP, W5RCI, W4HHK, W0BFB, W0JUP, W4EQM, K0EOK, W0USQ, W9LF, W0RYG, W9EGH, W5IOW, K0EMQ, W5DFU, W0WRT. Was I crying when none of them came back to me." *What a blow!*

"Would like to arrange meteor scatter schedules with other stations. Have at present a pair of 24-G's at 150 watts input, feeding a sixteen element colinear at seventy feet high. Have a new QTH at a hundred feet higher elevation than old location and should do much, much better. Anyone wishing to work Oklahoma, give W5PZ a card asking for sked on 144 mc." *Well at least you know you can hear them Art. Better luck next time.*

Tulsa, Oklahoma And yet another one from Oklahoma, Warren Weldon (W5DFU):

"We had a red hot aurora opening here September 4th and I heard thirteen states between 1730 and 2330 CST, but alas no new ones for me. Heard W4, W5, W8, W9, and W0 and the last two stations heard, W9LLG and W9AAG were coming in best with the beam northwest. *Well that's a switch for Oklahoma.* Only heard one meteor ping during entire aurora and that changed W9ZHL's rough aurora signal to T9 for a moment." *Thanks Warren, glad to know you got home from the convention in time for the aurora.*

Dallas, Texas Another aurora report, this time from Texas and Leroy May (W5AJG).

"Most certainly Texas can't brag on it's hot shot aurora work. So far as I know there just hasn't been any amount of it. It gets to Oklahoma (*We just heard that*) but up until this date, September 13, I had never heard any Aurora except on test tapes, etc."

"Art, W8KAY, called at 0400 this morning and said he was hearing stations as far south as Missouri, Mississippi and Tennessee. He thought I might like to see if I could hear any."

"Sure enough, it was coming through in Dallas, Texas. Didn't hear a lot but at least it was AURORA. Worked W0QDH and W0TGC, the latter in St. Louis, Missouri. Signals did have the characteristic aurora note to them. As before stated, I have been looking for this type noise since 1923 and this is the first instance of it I have ever heard in Dallas."

"Heard W4HHK working W1HDQ and heard W5RCI also. Of course didn't hear W1HDQ. Heard W0BOK calling W1RJA."

"That was the crop, but it was very encouraging to hear any aurora at all this far south. *I imagine so after twenty-three years of listening. Will it be that long for Helen to get New Mexico on six meters, do you suppose?* Could see nothing in the sky. This was from 0400 to 0600 and had meteor scatter sked with W4JXI at 0600 so thought we might get together on aurora. No dice though, either way. Heard nothing from him."

"Thanks to W8KAY for the phone call and allowing me to hear the stuff for the first time in my life." *He's like that, Art is. Very interesting dope, Leroy, and glad for you that you've finally heard the stuff.*

Collierville, Tennessee Paul has finally sent us some information from Tennessee (W4HHK).

"Re big aurora morning of September 13th, band open when got home from work at 0100 and stuck with it until 0545 CST (still open then). W1KCS, Rhode Island was worked for first Rhode Island, Tennessee contact on two meters, and state number 33 for me. Also worked W2's K2TKN, W2CXY, K2HOK, W2AZL, also W3SGA and W3TDF. Heard all areas except W6 and W7. Heard W5AJG, Texas; W5JWL, Arkansas; W5RCI, Mississippi; W4EQM, Alabama; K4EYE, Virginia; W0QDH/0, Kansas; and many 8's and W9's. Signals from W2CXY, and sometimes W1RFR." *Fine business report Paul. Glad to get mail from you back into the column.*

Long Beach, California Another one from the 'Golden State' this time about 220 mc., from Ralph Steinberg (K6GKX).

"The West coast has really busted it's britches on the 220 mc band. In the past six months more than thirty stations have come on the band in this southern California area. Yes, more coming. There is only one fly in the ointment, we need more stations to the north of us like San Francisco, Bakersfield, Sacramento and even points further north. We have the stations with power but at present there is not much activity on 220 north of the Los Angeles area. Therefore we would like to create some interest in the San Francisco area so we can get the long dx haul on this band such as the boys are doing in the east. To the south of us we have several San Diego stations, so this is well taken care of. The 220 mc band has great possibilities and the surface has not been scratched as to what we can do on it. We do know that it can compare to any other V.H.F. band, from the experience the 220 stations have had with it so far."

"The trend out here is for high gain antennas and more power. At the present the average station is putting out about fifteen watts but there are more than a dozen stations putting out from thirty watts up. By the way there are fifty-two stations operating from the San Diego to the Los Angeles area." *That's a new 220 mc. record, I'd say, and I'd also say the bigger the better in both power and antennas. Good luck fellas, I agree one hundred per cent.*

Athens, Tennessee From the 'Friendly City' and W4UVU, Jim Grant, comes some dope concerning that area:

"Thought I would let you know how the six meter activity is coming along in the little town of Athens in the hills of East Tennessee. At the moment we are growing rapidly,

[Continued on page 84]

RTTY

Byron H. Kretzman, W2JTP

16 Ridge Dr., High Hills
Huntington Station, N. Y.

QRM—the bane of existence to the usual radio amateur operating on the low-frequency bands can bother the RTTYer little and seldom—if certain techniques are used. First of all, to be properly girded for battle, the RTTYer should have a reasonably good receiver, a receiver with an operating bandwidth of about 1000 to 1200 cycles, for 850 cycle shift. Secondly, he must know how to tune in fsk. (*RTTY Handbook*, page 90)

Now, connected between the output of the receiver and the RTTY converter there should be two little "black boxes." One of these should be a band-pass input filter with a pass-band of roughly 1800 to 3200 cycles. The object here, mainly, is to attenuate those tones whose harmonics would fall into the 2125 and 2975 cycle channel filters of the converter. (Those filters are approximately 100 to 200 cycles wide in a good converter.)

For example, supposing QRM produced a 1500-cycle beat-note. With no band-pass filter this note would pass right on to the limiter stage(s) in the converter. The limiter, naturally, accentuates the 2nd harmonic (3000-cycles) and it falls right smack-dab into the

2975-cycle filter, messing up the copy. With a band-pass filter in between the receiver and converter, the 1500-cycle beat-note is attenuated enough to keep the limiter working for the most part on the desired tones produced by the fsk. Hence: no garble.

Band-pass Input Filter

Several years ago W2JAV developed a very simple and inexpensive band-pass input filter. The inductors were extracted from the surplus FL-8A "Range Filter." *Fig 1* shows the schematic diagram. The inductors marked 34M and 35M have a dc resistance of 80 ohms, while 31M has a dc resistance of 16 ohms. Adhesive tape can be used to fasten the stack of "I" laminations to the stack of "E" laminations. This is a relatively broad input filter, but therefore its component values are not critical, and it is still quite effective.

A sharper, and consequently more critical, band-pass input filter using the 88-mhy toroids from the surplus C-114A "loading coils" was later devised by W2JAV. This filter is described in detail on page 72 of the *RTTY Handbook*.

RTTY "Notch" Filter

The second "black box" that is of further help in making QRM ineffective is the W2JAV RTTY Notch Filter shown in the accompanying photographs taken by Russ McCann, K2-GFM. This ingenious device is a variable T-notch filter, permitting the nulling of any beat-note from 1700 to 3400 cycles. When used in conjunction with a converter that permits copying from *mark* or *space*, as well as normally from both, it permits the RTTYer to continue making copy even if the QRM is right on the *mark* or *space* frequency!

A Bud AU-1083 aluminum utility box 4" x 4" x 2" is used to house the filter. One of the removable panels is replaced with a 1/4" bake-

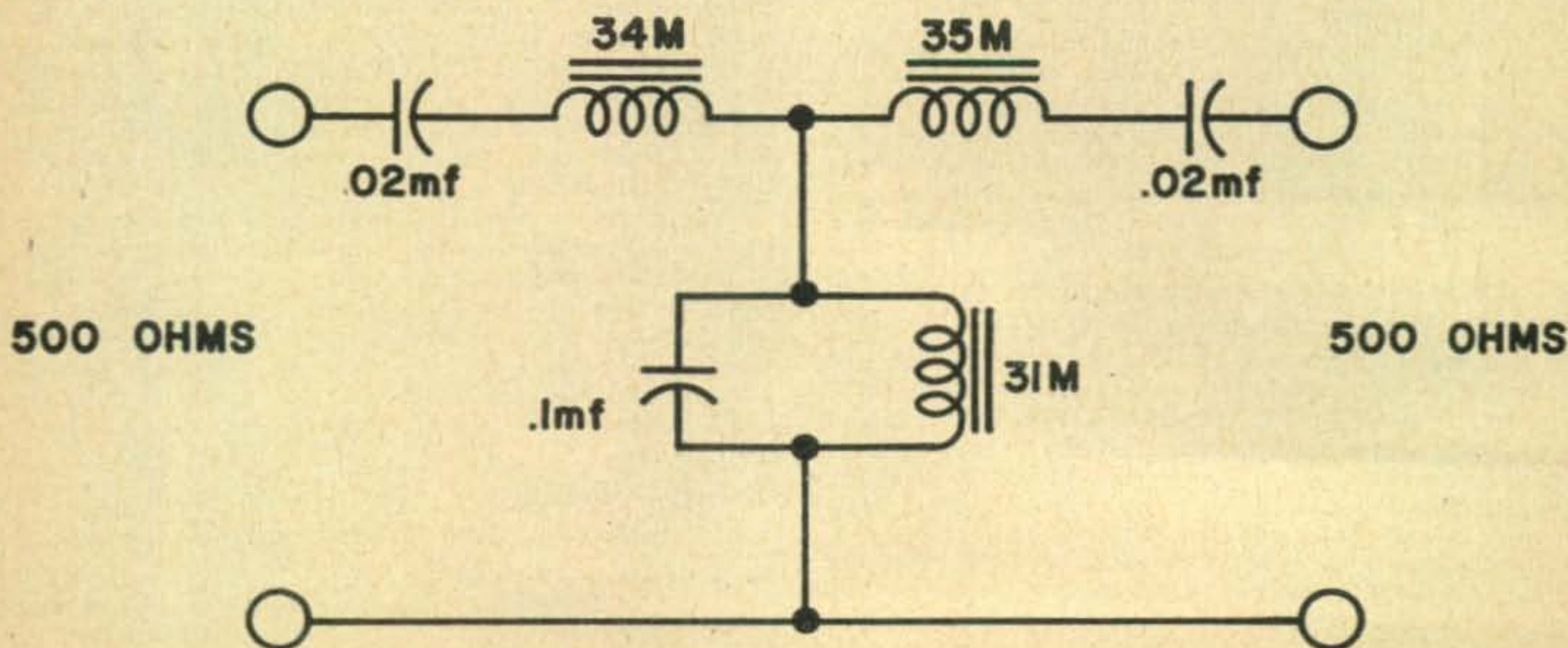
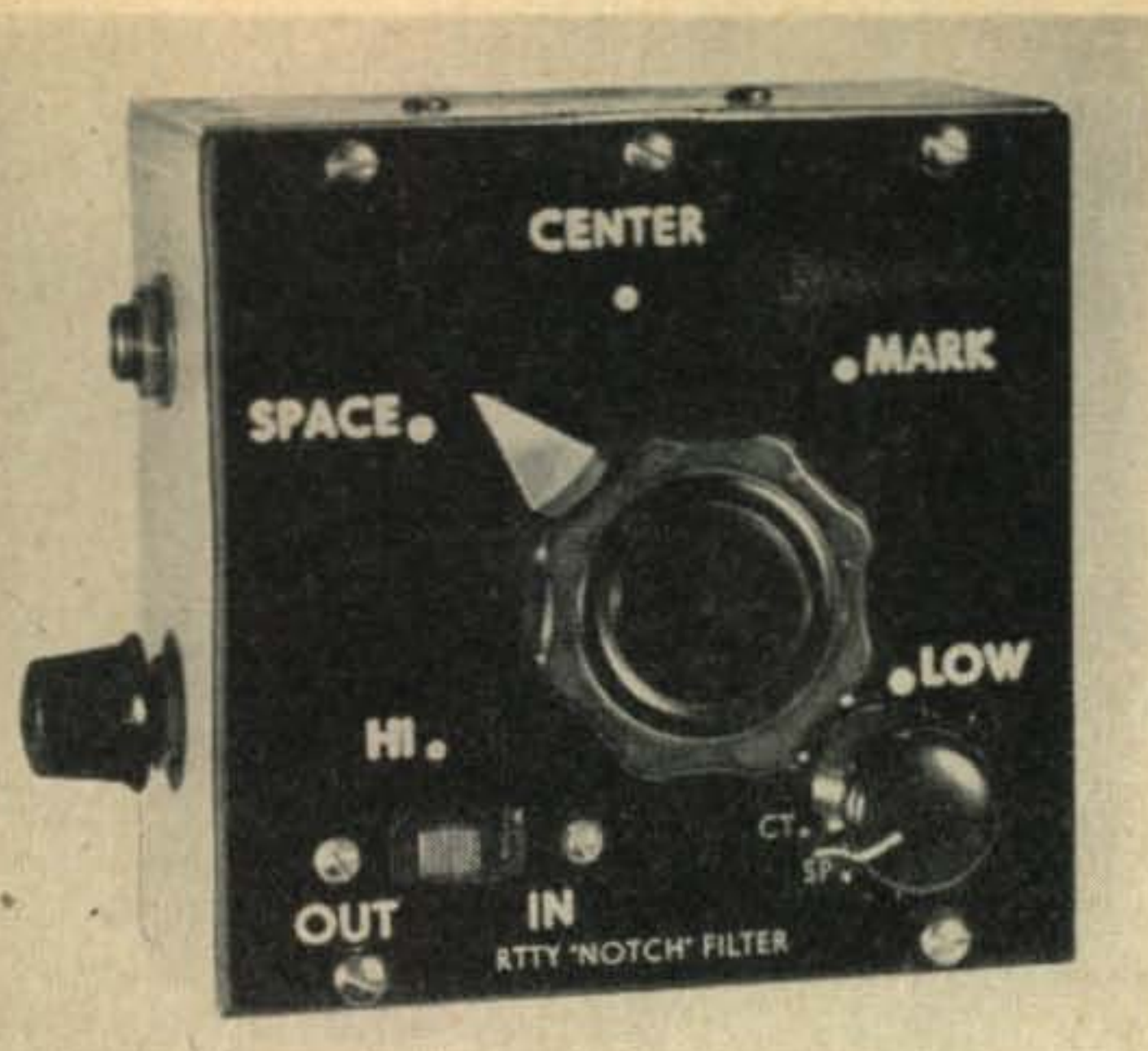
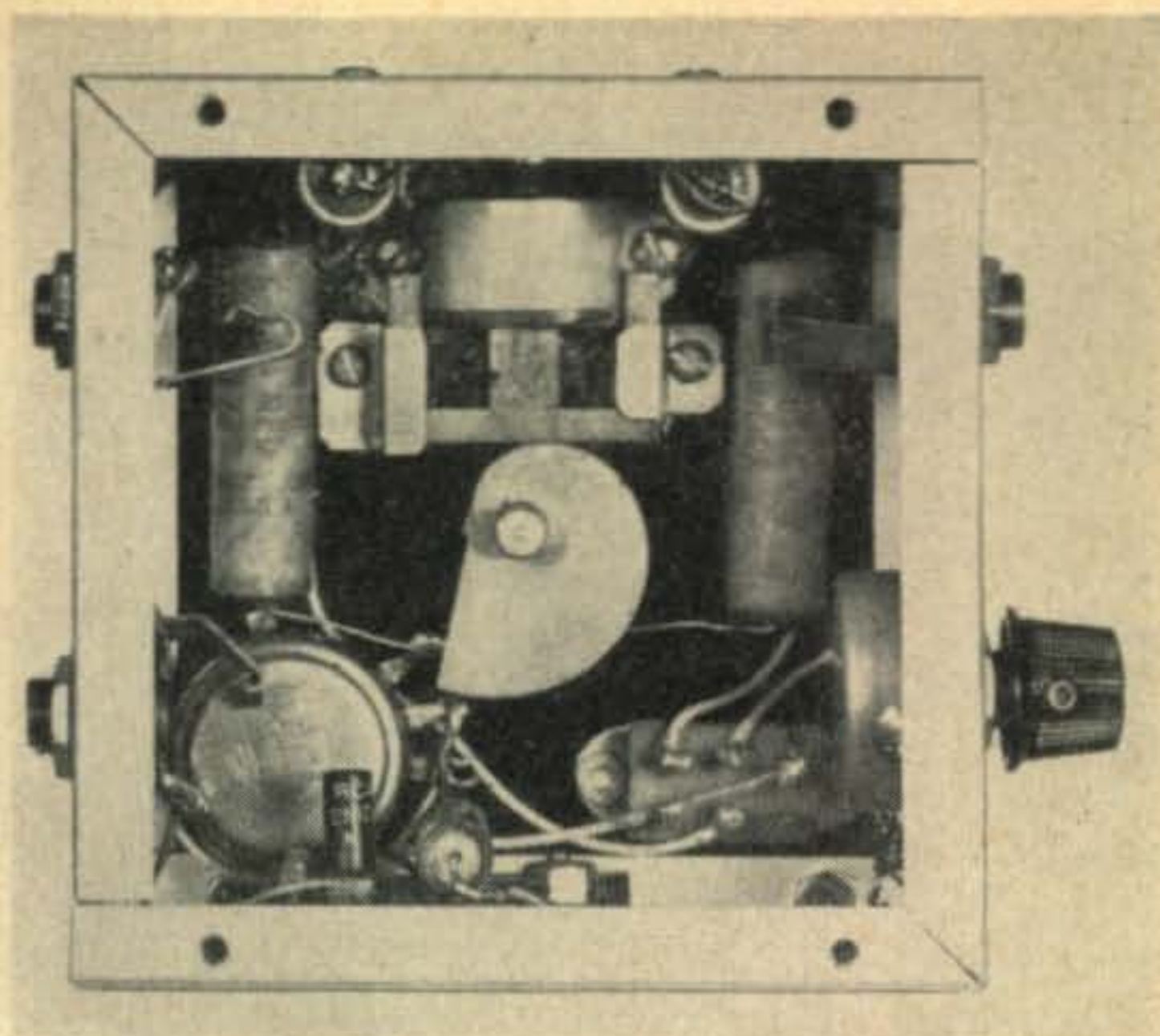


Fig 1—Band-Pass Input Filter Schematic Diagram.



RTTY "Notch" Filter, Front View



RTTY "Notch" Filter, Back View

lite panel, upon which most of the parts are mounted. The small single-stage transistor monitor amplifier is mounted on a thin bakelite sub-panel and is screwed to the side of the box. Also mounted on the sides are the input and output jacks, the monitor output jack, the gain control for the monitor amplifier, and a pair of fuse clips to hold the pen-light cells that power the amplifier. The bottom panel has four rubber feet to keep desk tops from being scratched.

The variable element of the T-notch filter is made from the 37M inductor from the FL-8A surplus "Range Filter." Only the "E" laminations are used; the "I" laminations are discarded. All of the "E" laminations are cemented together with a household cement and are clamped together in a vise to allow them to dry. The 37M coil itself is fixed to the bakelite panel with a thin metal U-shaped clamp. The E-core is slid in and out of the coil by a metal cam, sliding between two formed brass

C-clamps screwed to an additional mounting block of 1/4"-thick bakelite. A spring keeps the core pressed against the cam as it moves in and out. One end of the spring is soldered to an L-bracket and the other end fits into a small hole drilled into the center leg of the E-core. The sliding mechanism is well greased with *Lubriplate*, available in most radio parts stores. Fig 2 is a full-size drawing of the cam which can be used as a template. (Notice that it is shaped like the rotor plates of a straight-line-frequency variable capacitor.)

Fig 3 is the complete schematic diagram of the notch filter. Designed to operate in a 500/600 ohm line, a dpdt slide switch is provided to switch the filter IN and OUT of the circuit. *L*, of course, is the 37M coil of the FL-8A. As modified, its inductance is variable from about 108-mhy minimum to about 447-mhy maximum. *R* is a compensating variable resistor, adjusting the filter for the optimum impedance at the particular frequency being nulled; sort of

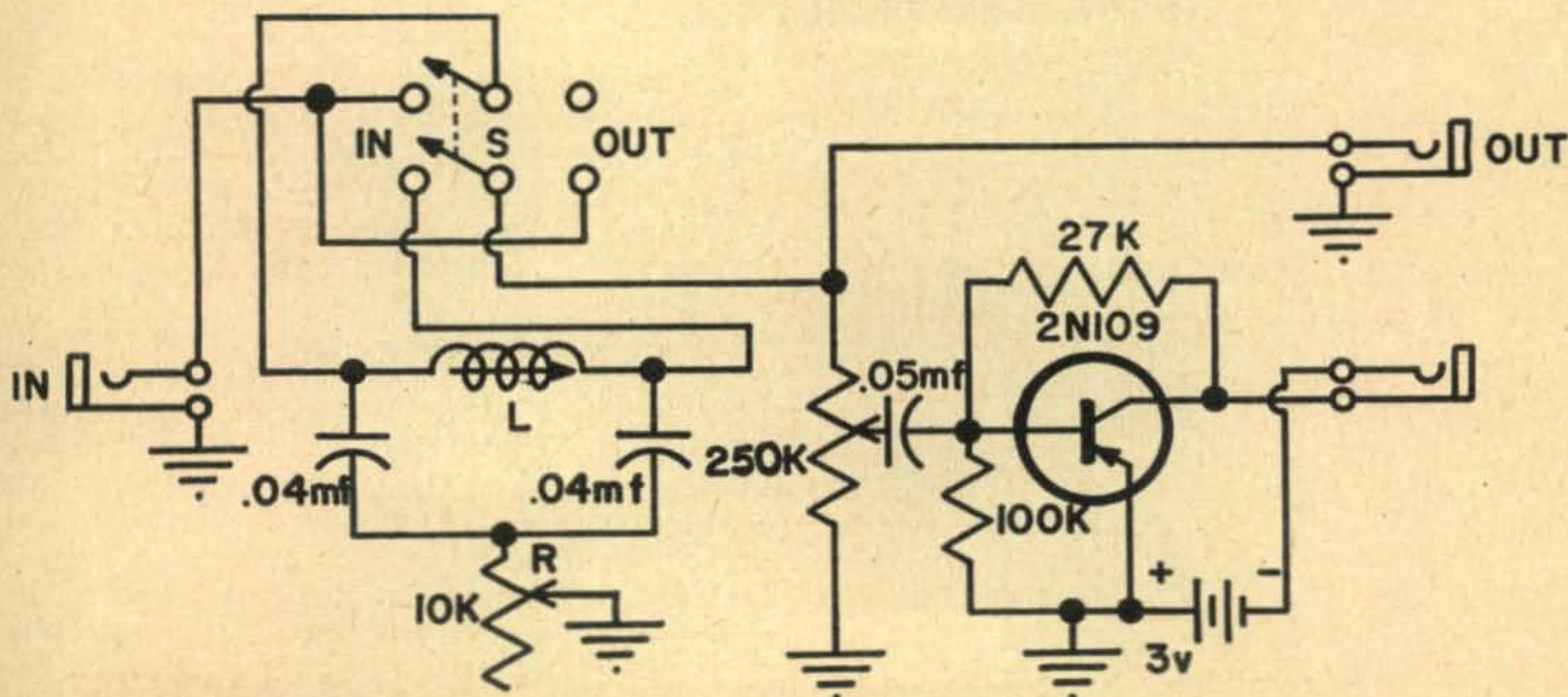


Fig 3—RTTY Notch Filter, Schematic Diagram.

a balance control. The 250k ohm potentiometer is the gain control for the monitor amplifier. Note that the MON jack must be insulated from the case since the battery current passes through the headphones plugged in.

As can be seen from the photograph, the cam shaft is fitted with a large knob with a pointer. The bakelite panel is roughly calibrated for MARK (2125), CENTER (2550), and SPACE (2975). The balance control has a small knob with pointer and the same rough calibration is provided.

In actual operation, even in the absence of QRM, the notch filter is usually left switched IN, and it is adjusted to the CENTER frequency, 2550 cycles. The object here is to deepen the cross-over point of the regular channel filters of the converter. When QRM rears its ugly head, the notch filter is then used to null it out, working back and forth between the large knob (L) and the small knob (R). In listening for the null, don't forget to crank up the gain control, since the depth of the null is around 55 db.

Those of you who attended the recent RTTY Meeting at the ARRL Convention in Chicago were lucky enough to see this and other transistorized units demonstrated by W2JAV. We hope to eventually describe here in *CQ* magazine, either as feature articles or in your RTTY column, the other interesting pieces of RTTY equipment demonstrated by Phil, so stay with us, will you? (The best way to stay with us is with a subscription, you know.)

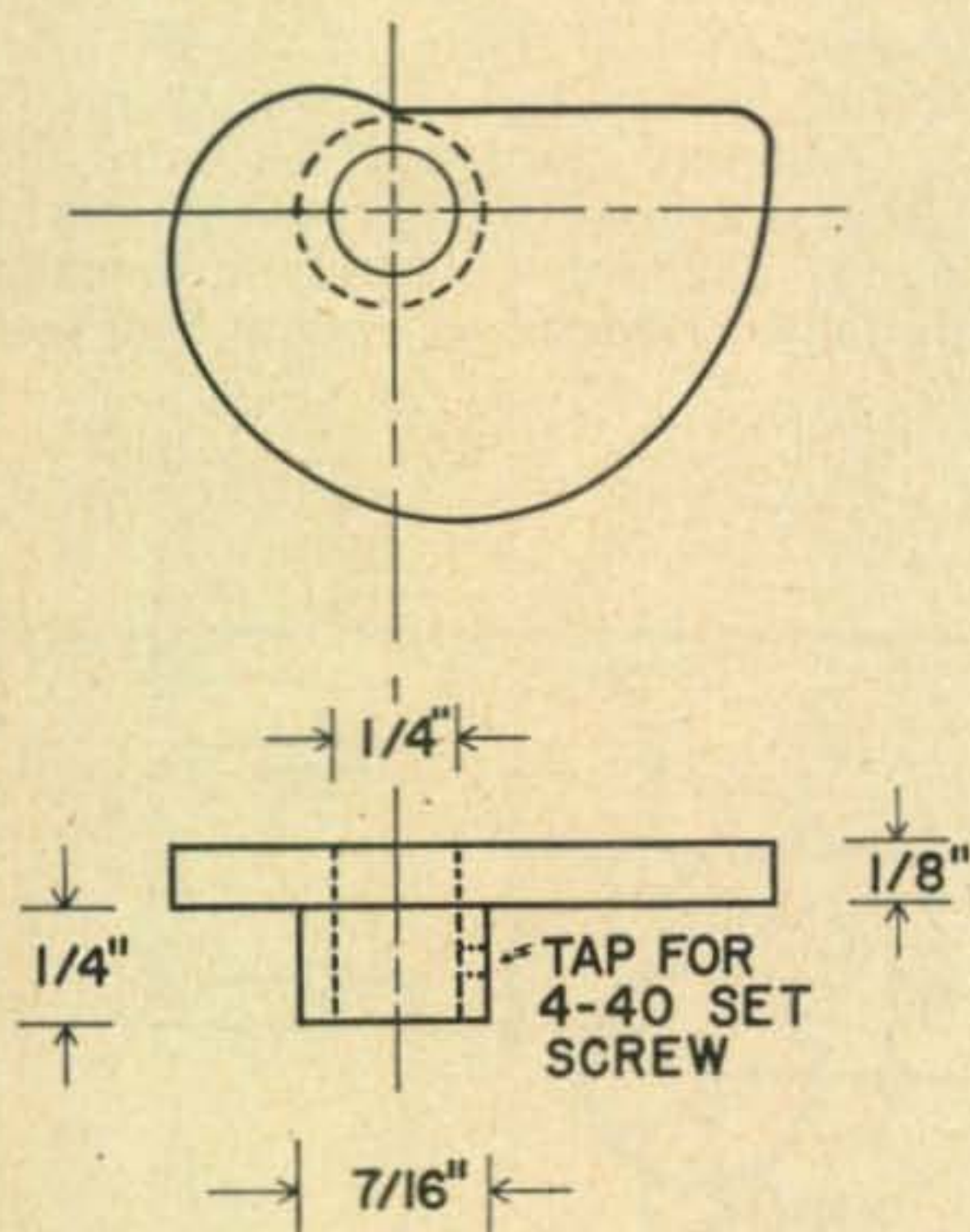


Fig 2 — RTTY Notch Filter, Cam Template and Details.

By the way, if you have any questions about the RTTY Notch Filter, Phil asks that you do not write him directly, but that you send your letters to me.

RTTY Frequencies

W2KXT has suggested that we spell out those frequencies available for RTTY so that the readers eyes are not strained in reading the fine print of the FCC Rules and Regulations as they appear on pages 89 and 90 in the *RTTY Handbook*. This sounds like a fine idea, so here we go:

First of all, let us explain the various types of RTTY emission as defined by the FCC:

Type F-1 — Carrier-shift telegraphy. Commonly, this is known as frequency-shift-keying (fsk), and any amount of shift up to 900 cycles is permitted. (We usually use 850-cycle shift.)

Type A-2 — Amplitude tone-modulated telegraphy. This can be make-and-break (single tone) or audio-frequency-shift-keying (afsk) of an audio oscillator which is fed to a radio transmitter that can be *amplitude* modulated (AM). Any amount of shift up to 900-cycles is permitted, but the audio tones must not exceed 3000-cycles. (We usually use 2125 and 2975 cycle afsk.)

Type F-2 — Frequency tone-modulated telegraphy. Same as A-2 except that the radio transmitter is *frequency* modulated (FM).

Now, here are our possibilities, tabulated:

- 160-meters: No RTTY permitted
- 80-meters: 3500 to 3800 kc, fsk (F-1) only
- 40-meters: 7000 to 7200 kc, fsk (F-1) only
- 20-meters: 14,000 to 14,200 kc, fsk (F-1) only
14,300 to 14,350 kc, fsk (F-1) only
- 15-meters: 21.00 to 21.25 Mc, fsk (F-1) only
- 11-meters: 26.96 to 27.23 Mc, fsk (F-1) or afsk (A-2 or F-2)
- 10-meters: 29.00 to 29.70 Mc, fsk (F-1) or afsk (A-2 or F-2)
- 6-meters: 52.50 to 54.00 Mc, fsk (F-1) or afsk (A-2 or F-2)
- 2-meters: 144 to 148 Mc, fsk (F-1) or afsk (A-2 or F-2)
- Any band below 2-meters: complete band, same as for 2-meters

RTTY Course

El Camino College, in the Los Angeles area of California has a course in RTTY. This, to the best of our knowledge, is the first time that anyone has offered a civilian course in RTTY. Horace W. Bates, W6QZQ, Assistant Director, Industry & Technology Division, reports approximately 50 students enrolled in this program. He states that, "... the program is an outgrowth of our communications major—the

[Continued on page 86]

PROPAGATION

Seasonally normal shortwave radio propagation conditions are forecast for almost the entire month of December. Exceptionally good conditions are expected December 24-28th. Unstable to moderately disturbed conditions are most likely to occur December 6-7 and 15-16. A 12-month smoothed sunspot number of 157 is forecast for December.

George Jacobs, W3ASK

607 Beacon Road,
Silver Spring, Md.

During December and the winter months in the northern hemisphere, daytime maximum usable frequencies peak at their highest values of the year. During this period there is also a considerable *decrease* in ionospheric absorption, atmospheric noise, and static levels.

The following is an over-all picture of band conditions forecast for December, 1957 with a brief discussion of the qualitative changes taking place in each high frequency amateur band from month to month. For specific times of band openings for a particular DX circuit, refer to the *CQ Propagation charts* on the opposite page.

6 Meters:

The co-incidental occurrence of seasonal peak MUF's and unprecedented sunspot activity should result in world-wide 6-Meter DX openings during the daylight hours of the winter months. DX openings this winter should be as frequent as, or more frequent than, last year. On trans-Atlantic paths there is a very slight possibility that the MUF may rise to 70 Mc on at least one day during the month, permitting cross-band QSO's between European amateurs authorized to use the 70 Mc. band and American amateurs on 6 and 10 meters. The possibilities are also good for DX television reception again this winter. Last winter brought widespread reports of reception of BBC Channel 1 (audio 41.5 Mc, video 45 Mc.) throughout the United States and the world. The Geminids meteor showers between December 10 and 13th should result in meteor type 6-meter openings during this period.

10 Meters:

Excellent world-wide DX propagation conditions are forecast for this band from early morning through the early evening hours. Almost daily openings to most areas of the world are expected, with strong signals and little fading.

15 Meters:

While closing somewhat earlier in the day than during the fall months, excellent world-wide propagation conditions are forecast for 15-meters. The band is expected to open shortly after dawn and remain open through the early evening hours. Signals from an easterly direction should peak shortly after noon-time and those from the west and south during the late afternoon and early evening hours. Peak conditions on 15-meters generally occur an hour or two after the peak on 10-meters. Short-skip propagation, between distances of 600 and 2400 miles, should be possible on most days from a few hours after sunrise until after sunset.

20 Meters:

As a result of the seasonal decrease in ionospheric absorption, signal levels on 20-meters should be considerably stronger than during the summer and fall months. The band is expected to open to most areas of the world shortly after sunrise, peak during the late afternoon and early evening hours, and remain open to many areas of the world around-the-clock. During the early afternoon hours, the 20-meter skip should extend from a few dozen miles to several thousand miles, resulting in strong interference between local and DX stations.

40 Meters:

Fairly good propagation conditions are expected on 40-meters to many areas of the world from a few hours before sunset until shortly after sunrise. Static levels will be seasonally low, and on some nights signal to noise levels should be ex-

ceptionally high. Short-skip propagation is expected around-the-clock, with skip as short as a few miles during the early afternoon, increasing to beyond 2000 miles as the hours of darkness approach.

80 Meters:

Eighty-meter propagation conditions are at their best during the winter months. Static levels are low, signals stronger, and skip longer. DX openings to some areas of the world should be possible on a small percentage of the nights during December and the winter period. During the daylight hours, normal ionospheric absorption limits skip to about 250 miles, with range increasing as darkness approaches.

160 Meters:

Observations made by W1BB last winter seem to indicate that the sunspot cycle has little, if any, influence on *160-meter* propagation. During the daylight hours normal ionospheric absorption prevents any skip at all in this frequency range. During the late afternoon hours of December, as absorption decreases, 160-meter skip begins. During the evening hours the range will generally extend to about 1500 miles, and at times may reach several thousand miles.

Sunspots

Solar activity continues to break all previous scientific records. The *Swiss Federal Solar Observatory* reports a monthly sunspot number of 244 for September, 1957. *This is the highest monthly sunspot number ever recorded.* Septembers' record monthly number results in a 12-month smoothed sunspot number of 174 centered on March, 1957. The sunspot cycle is determined from the smoothed sunspot numbers, and the present cycle is now considerably higher than any recorded previously in the more than 200 years that solar records have been kept. This unusually high level of solar activity resulted in extreme propagation conditions during September. Periods of exceptionally good conditions were interrupted by prolonged periods of high frequency blackouts. The blackouts were caused by violent solar flare-ups taking place on the sun, and were most noticeable during September 2-5, 13-14, 21-24 and 29th. Associated with these violent solar explosions were brilliant auroral displays, seen in many parts of the world for the first time in a generation. Intense ionization from the aurora permitted unusual VHF propagation on several days

during September, despite the fact that the lower frequency bands were practically useless for long distance communication.

Operations Smokepuff

On September 23rd, the U.S. Air Force fired the first rocket of Operations Smokepuff in an attempt to form a man-made ionized region high above the surface of the earth. Hundreds of radio amateurs in the southeastern area of the United States stood by to communicate on VHF via this man-made ionosphere. The rocket reached proper altitude, but owing to an unfortunate failure in the radio control system, the gas cloud necessary for ionization could not be released properly, and the initial attempt was unsuccessful. The Air Force thanks those amateurs who stood by to participate in Operations Smokepuff. Other rocket firings in this project are planned for early 1958.

Sputnik

With the announcement by Radio Moscow on October 4th that an earth satellite had been successfully launched by the U.S.S.R., radio amateurs around the world began tuning in to the satellite transmitters operating on 20,005 and 40,002 kilocycles.

The following letter received from A. D. Mayo, W5DF, summarizes the reception characteristics of the 20,005 Kc. signal.

"... They said it was on 20,005 Kc. The first time K5JKH and I heard it it was about $\frac{1}{2}$ kilocycle higher. Then it dropped to about $\frac{1}{2}$ kilocycle lower. This change in frequency from about 20,005.5 Kc. to about 20,004.5 occurred every time the satellite passed near us at Jackson, Miss. When it was travelling along a path, say in the Pacific at right angles to the signal path from us to it, the frequency was about 20,005.0 Kc. This appears to be a demonstration of the doppler effect, like the train whistle having a higher pitch as it approaches, lower as it goes away. (See Figure 1B).

When the satellite passed over North America the change in frequency was sharp and took place in 10 or 20 seconds as it passed through 20,005.0 Kc. This was too fast a change to spot with the heterodyne frequency meter so we used a sharp communications receiver with a well calibrated dial.

On two occasions we noted that the signal came in at two different frequencies simultaneously, about 20,005.5 and 20,004.5 Kc. This occurred when the signal was very weak and while it was near our location but not over us (above the West Coast for example). I can only guess that this was caused by the signal arriving over two different paths, one

path leaving the satellite to its rear and the other from the front, producing some sort of double doppler effect at the same time.

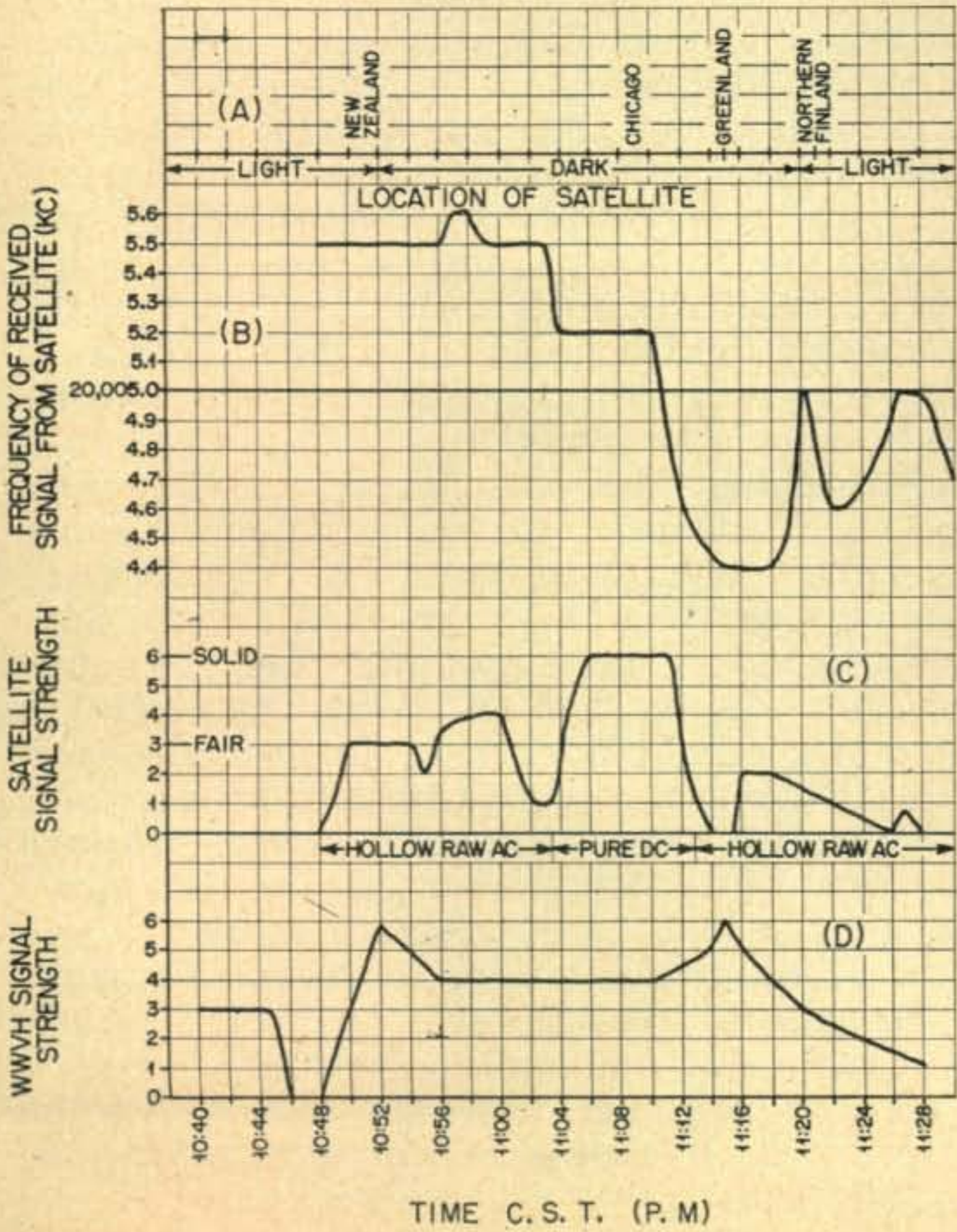
"On the night of October 6th we heard the satellite on 20,005 Kc. for about 40 minutes, or approximately half-way around the world, from New Zealand to Northern Europe. Figure 1 shows the variation in frequency and signal strength as well as other data observed. Since there were abrupt frequency changes around New Zealand and over Finland, and since these locations roughly correspond to the places where the satellite entered and emerged from darkness, there may have been a temperature change which caused the frequency of the transmitter to change at these points.

We also noted that WWVH signals from Hawaii on 20,000 Kc. were stronger during the time the satellite was in the Pacific area, reaching a peak when it was over the West Coast of the USA. Also, WWVH signals disappeared at one time when the satellite signals disappeared and this may have been due to failure of propagation for this interval. We suspect that some WWVH signals were probably reflected from the satellite and whatever else is up there with it. (Perhaps in the same manner that an airplane will reflect TV signals, N.B.).

"If the line of sight from the satellite to us averages about 3000 miles, the signal

[Continued on page 90]

Fig. 1



ALL TIMES IN EST

Eastern USA To:	*6/10 Meters	15 Meters	20 Meters	40/80 Meters**
Western Europe	8A-12N (2)* 6A-8A (3) 8A-1P (4) 1P-4P (2)	5A-7A (2) 7A-1P (3) 1P-3P (4) 3P-5P (3) 5P-8P (2)	5A-12N (3) 12N-5P (4) 5P-11P (3) 11P-5A (2)	3P-5P (2) 5P-2A (3) 2A-4A (2) 6P-2A (2)**
Central Europe and European USSR	8A-10A (1)* 6A-8A (2) 8A-11A (4) 11A-2P (2)	5A-7A (2) 7A-9A (3) 9A-12N (2) 12N-2P (3) 2P-4P (2)	4A-11A (2) 11A-3P (3) 3P-8P (2) 8P-12M (1)	4P-6P (2) 6P-10P (3) 10P-2A (2) 8P-1A (1)**
Eastern Mediterranean	8A-10A (1)* 6A-11A (3) 11A-1P (2)	5A-7A (2) 7A-9A (3) 9A-11A (2) 11A-1P (3) 1P-3P (1)	12M-3A (1) 3A-7A (2) 7A-11A (1) 11A-5P (2) 5P-9P (1)	5P-12M (2) 8P-10P (1)**
North and Central Africa	8A-12N (2)* 6A-8A (3) 8A-1P (4) 1P-4P (3) 4P-6P (2)	6A-11A (2) 11A-3P (4) 3P-6P (2) 6P-8P (1)	12M-5A (1) 5A-1P (2) 1P-8P (4) 8P-12M (2)	5P-7P (2) 7P-2A (3) 9P-1A (2)**
South America	8A-11A (2)* 5P-8P (1)* 6A-10A (3) 10A-1P (4) 1P-5P (3) 5P-7P (2)	5A-10A (3) 10A-2P (2) 2P-5P (4) 5P-8P (3) 8P-10P (2)	5A-8A (3) 8A-2P (1) 2P-5P (2) 5P-11P (4) 11P-5A (2)	7P-4A (3) 4P-6A (2) 9P-3A (2)**
South East Asia	8A-10A (1) 6P-8P (1)	8A-10A (2) 5P-9P (2)	5P-11P (2) 11P-4A (1) 4A-7A (2) 7A-9A (1)	NIL
Australasia	9A-11A (3) 11A-6P (2) 6P-8P (3) 8P-10P (2)	9A-11A (2) 11A-4P (1) 4P-8P (2) 8P-10P (3) 10P-12N (1)	5P-7P (1) 7P-10P (2) 10P-4A (3) 4A-8A (2) 6A-9A (3)	4A-8A (2) 5A-7A (1)**
Guam & Pacific	4P-6P (1)* 1P-3P (2) 3P-7P (3) 7P-9P (1)	8A-10A (2) 3P-5P (2) 5P-8P (3) 8P-10P (2)	6A-9A (2) 3P-5P (2) 5P-10P (3) 10P-2A (2)	11P-2A (1)
Japan & Far East	5P-6P (1) 6P-7P (2) 7P-8P (1)	5P-6P (1) 6P-8P (3) 8P-10P (1)	4P-9P (2) 9P-2A (3) 2A-5A (2) 5A-7A (3) 7A-9A (1)	1A-7A (1)
India and Central Asia	7A-9A (1) 6P-8P (1)	7A-8A (1) 8A-10A (2) 5P-9P (2)	7A-12N (2) 8P-11P (2)	7P-10P (1) 5A-7A (1)

ALL TIMES IN CST

Central USA To:	*6/10 Meters	15 Meters	20 Meters	40/80 Meters**
Western and Central Europe	8A-11A (2)* 6A-8A (3) 8A-10A (4) 10A-12N (3) 12N-2P (2)	6A-8A (3) 8A-12N (4) 12N-2P (3) 2P-6P (2)	12M-6A (2) 6A-11A (1) 11A-3P (3) 3P-7P (2) 7P-12M (1)	4P-3A (2) 6P-1A (1)**
Southern Europe and North Africa	8A-11A (2)* 5A-7A (2) 7A-12N (4) 12N-2P (3) 2P-4P (2)	5A-8A (3) 8A-10A (2) 10A-2P (4) 2P-6P (3) 6P-8P (2)	6A-12N (1) 12N-3P (4) 3P-10P (3) 10P-6A (2)	5P-1A (2) 7P-12M (1)**
Central and South Africa	9A-12N (1)* 6A-9A (2) 9A-2P (4) 2P-4P (3) 4P-7P (2)	5A-10A (1) 10A-12N (2) 12N-4P (4) 4P-7P (3) 7P-9P (2)	11A-1P (2) 1P-8P (3) 8P-12M (2)	6P-9P (1)
Eastern Mediterranean	6A-9A (3) 9A-12M (2)	5A-12N (3) 12N-2P (2)	4A-11A (1) 11A-4P (2) 4P-10P (3)	6P-10P (1) 8P-10P (1)**
South America	8A-10A (1)* 5P-8P (1)* 6A-1P (3) 1P-4P (4) 4P-7P (2)	5A-9A (3) 9A-2P (2) 2P-6P (4) 6P-9P (3) 9P-12M (2)	3A-8A (3) 8A-3P (2) 3P-5P (2) 5P-11P (5) 11P-3A (4)	6P-4A (3) 4A-7A (2) 7P-3A (2)**
Japan and Far East	4P-6P (1)* 2P-4P (2) 4P-6P (4) 6P-8P (3)	1P-4P (2) 4P-8P (4) 8P-10P (3)	1P-7P (2) 7P-11P (3) 11P-6A (2)	1A-7A (1)
South East Asia	10A-1P (3) 4P-7P (3)	7A-9A (2) 9A-3P (1) 3P-8P (2)	6A-10A (2) 3P-6P (2) 6P-9P (3) 9P-6A (1)	NIL
Hawaii	11A-1P (1)* 10A-2P (3) 2P-7P (5) 7P-10P (3)	9A-3P (3) 3P-9P (5) 9P-12M (3)	12M-10A (3) 10A-3P (2) 3P-6P (3) 6P-12M (5)	8P-8A (4) 9P-7A (3)**
Australasia	8A-11A (3) 11A-2P (2) 2P-7P (4) 7P-9P (2)	7A-10A (3) 10A-3P (2) 3P-9P (4) 9P-12M (3) 12M-2A (2)	8P-12M (2) 12M-4A (4) 4A-7A (2) 7A-9A (3)	2A-7A (3) 3A-6A (1)**
Antarctica	NIL	7A-12N (1) 12N-3P (2) 3P-8P (3) 8P-12M (2)	4P-8P (1) 8P-12M (2) 12M-4A (3) 4A-8A (2)	12M-4A (1)

NOVICE

Donald L. Stoner, W6TNS

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Ontario, California

TVI and the Novice (or The Herringbone Jungle)

Pretty serious business this television interference. I know, I just went through a seige of it myself. By golly, I'll bet almost every Novice reading this has interfered with a television set at one time or another! With odds like that, TVI sounds like pretty important subject matter for the Novice Column.

Although some may disagree violently, the television receiver is not an instrument designed to torture the radio amateur. No, it is intended as a form of entertainment for everyone. But just let anyone interfere with its entertainment value, whether it is a salesman at the door or Joe Novice putting a check pattern on the screen, the TV set owner will howl.

Most television receivers have one thing in common. They are cheap! The television manufacturer is in a business just loaded with competition. If he can save a nickel or a dime by throwing out parts, his competitors force him to do it. After all, that filter on the antenna or those traps in the i.f. amplifier don't make the picture any clearer. At least not until some unfortunate sole who lives next to a ham has the misfortune to buy one.

Why? The usual Novice transmitter is capable of tuning between 1.8 and 30 mc. Our domestic television receivers are designed to bring in 12 television channels between 54 and 216 mc. How can a Novice transmitter interfere with a television receiver designed for such widely different frequencies? Unfortunately, it's very easy. First of all, a television set is an extremely sensitive device. It is hungry for an rf signal that will paint a picture on the end of a cathode ray tube. It is a truly democratic machine in that it does not care if the rf is 7 or 70 mc! Second, the lucky television set owner knows nothing more of advanced electronics than changing the channel selector. Third, your 75 watts is a whale of a lot more power than the average 500 microvolt signal

that the television antenna receives. All of these things compound to cause TVI.

TVI can be separated into six definite categories: parasitics, mis-tuning, harmonic radiation, non-linear re-radiation, fundamental overload, and a fundamental pickup. The first three forms are caused by the transmitting equipment and the second three types of TVI are a direct result of the television receiver design. The "tools of the trade" for curing this interference are the *high pass filter* and the *low pass filter*. The typical high pass filter is connected to the receiver transmission line (preferably as close to the tuner as possible). In operation it allows the television frequencies to pass unhindered but virtually short circuits all frequencies below 50 mc. Conversely, the low pass filter is inserted in the transmitter transmission line and it prevents signals above say 30 mc from being radiated by the line and antenna.

Interference that you can cause

Parasites. The final amplifier in your rig is a real power house. It will "go into business for itself" if given sufficient reason. As an example, the wires that connect the tuned circuits to the grid or plate of the final are also tuned circuits. It's a fact. In a typical transmitter the wires might resonate at 180 or so mc. In addition to amplifying your 80 meter cw signals the final might generate one or more signals in the VHF range. These unwanted spurious signals are called parasitics. To break up any VHF resonances in the transmitter, parasitic suppressors are inserted in the grid and plate circuit of the final amplifier. They consist of five or six turns of heavy wire wound on a 51 ohm resistor, as an example. Parasitics can cause interference in the picture or sound, or both and they can appear on any or all of the television channels. They can usually be recognized by the fact that the grid or plate tuning controls will change the frequency and/or intensity of the interference. Although a low pass filter on the transmitter may help get rid of the interference, let's face it, your rig is not working correctly and it should be repaired.

Mis-tuning. This condition is caused by tuning the transmitter to some frequency other than the wanted one. As an example, let's say you are operating on 15 meters (21 mc.). Suppose that you tune the grid tuning control nearer to 42 mc than to 21 mc. Although the final may receive enough 21 mc drive to operate satisfactory, you will be forcing excessive amounts of second harmonic energy through the final. The interference can be recognized by the fact that the interference frequency will bear a definite relationship to the band you are operating on (see television frequency chart). Although this condition can also be helped by a low pass filter, again the fault lies in the transmitter. It should be cured there to give the low pass filter a "fighting chance."

Harmonics. This form of interference is similar to the first two troubles except that it is not something that you cure by repairing the transmitter. The final amplifier in your transmitter is operated *Class C*, that is, the tube is biased to cut-off and the rf from the driver stage pulses the final into conduction. The result is the abundant generation of harmonics. It is inherent in Class C operation and although they can be minimized, they cannot be eliminated. To give you an example, a Novice transmitter operating on 7.150 mc will generate a second harmonic at 14.3 mc, a third harmonic on 21.45 mc, a fourth harmonic on 28.6 mc and so on. These can all be detected and measured at the output of a typical transmitter. They continue right on up through the television spectrum ad infinitum. If you are radiating harmonics of sufficient energy, the neighbors television set will also detect them!

Harmonic interference can also be recognized by the fact that the interference will bear a definite harmonic relationship to the transmitter frequency. The cure for harmonic interference is a low pass filter *and* an antenna coupler *if* you are not using coaxial transmission line. In almost all cases this will cure the trouble.

Harmonic antennas such as the T2FD, the Windom, long wire, and end fed Zepp are great sources of television interference. Assuming that a weak harmonic does get through to the antenna it can be radiated since the antenna works on the fundamental *and all its harmonics*. A good antenna tuner will prevent even that weak harmonic from reaching the antenna. A Novice who feeds a long wire (as an example) directly by the pi-network is asking for trouble! Make it a rule. Never, never, never feed a multiband antenna without an antenna coupler and a low pass filter. Don't forget it is just as serious if you interfere with commercial or government services as it is a television receiver. And believe me, the FCC gives pink tickets to Novices too.

Interference that is not your fault

Non-linear re-radiation. This is a relatively rare form of interference but it should be mentioned here. Whenever metals come in contact with oxidized joints, it will rectify. As an example let's say that your metal rain gutters (or metal clothes line wires) have oxidized connections. It is possible for them to pick up your transmitter, rectify the rf energy, and re-radiate power in the form of harmonics. Your transmitter might be perfectly clean of harmonics and still cause harmonic interference this way. Another example of this harmonic re-radiation is Snortin Mortin (remember that?). When Mortin was coupled too tightly to the transmission line it rectified the rf (via the rf power supply) and re-radiated it in the form of television interference. The interference can occur

on any or all channels, sound or picture. The only way to cure it is to find the source and eliminate it.

Fundamental Overload. As I mentioned earlier, the power output of your transmitter is many times that of the received television station. Poorly designed television receivers allow power from the amateur transmitter to reach the rf amplifier in the tuner. This high power signal paralyzes or overloads the rf amplifier and produces interference on all channels. The only cure is to connect a high pass filter in the transmission line of the TV set as close to the tuner as possible. Nothing you can do at the transmitting end will clean up the trouble except reducing the power output or turning the switch off.

Fundamental Pickup. Another "feature" of poorly designed television receivers is pickup in the i.f. range. Older TV sets used a 21.25 mc sound i.f. and were very poorly shielded. The signal from a Novice 15 meter transmitter might side step the tuner altogether and be picked up directly in the receiver i.f. channel. This is usually only encountered on the 15 meter band. Quite often a high pass filter in the antenna lead will cure the interference. If not, it is necessary to shield the bottom of the set and possibly the i.f. amplifier tubes. Bypass capacitors (about .01 mfd) installed where the power line enters the back of the set will help also.

What to Do

The feeling of the FCC on TVI matters is this: If you can demonstrate that you can operate a television set in your dwelling without interference, your transmitting equipment is considered "clean." I believe you can convince even the most irate neighbor that since your rig does not bother your own set, there must be something wrong with his or her set. This is your biggest selling point. Whatever you do, clean up your own set. All's fair in love, war and TVI. Shield it, put filters all over it, do anything necessary to cure it. If you still have TVI, better check that transmitter, Bud. Get rid of the harmonics with a low pass filter and an antenna coupler. If it does not have it, place .001 disc ceramic by-pass capacitors between have the time, take it on and off and demonstrate (except the antenna lead, of course), such as the line cord, the key, and the transmit-receive cable.

Once you have cleaned up your own installation, it is strictly a matter of salesmanship with the neighbors. Tell them about the high pass filters or show them the one on your set. If you have the time, take it on and off and demonstrate the difference. Above all never lose your temper, no matter how exasperating the situation may be. You may be 100% in the right, but that won't fix those mysterious scratches that appear on the side of your car, or the

broken windows in the extreme cases. Play it cool

Low pass filters come in a variety of sizes and shapes. I use an E. F. Johnson model and it does a very effective job. On my own set I have a Drake High Pass Filter which appears to be a very good device. Regency Company also makes a good inexpensive high pass filter.

WHO'S DX?

Congratulations to Ulf Ericsson, Sandelhielmsgatan 3, Vanersborg, Sweden who has been assigned the call SM6BMB. Ulf writes: Dear Don, I will be on 7 and 3.5 mc cw with 50 watts input. I will be QRV on 7145-7150 kc calling CQ WN/KN *and tuning the whole Novice band*. Look for me 0100-0500 GMT Sunday Mornings and sometimes on other days. I may also be on 3690 occasionally. I have heard the following stations: 7 mc., Aug 18, 0300-0430 GMT KN1CVJ, ADU, CIZ, KN2QRY, WN2III, KN3AQK, KN4AHG, KN5LLF. Aug. 25, 0215-0545 GMT, KN1-AZD, CTP CIR, BNL/1, CKD, CYJ, CFO, KN2YAP, ZFV, AOJ, VQQ, UYK, WN2RHK, QFY, DAG, TKZ, ONQ, PVM, KN3, BLV, BCD, KN4MZU, KTU, QOK, MKH, KN5JBS, KN8GBR, CVK, KN9IYC. 21 mc., Aug 16, 2130 GMT, KN2ULZ. Aug. 17, 2215-2230 GMT, KN2YXY, KN3AFP. Aug 18, 1950-2110 GMT, KN1CJV, BSB, CBV, AMC, BIQ, WN1OQA, KN2ZGT, VKI, ZHY, WN2ONQ, LOJ, BUZ, OSO, KN3AUA, AHK, KN5KGI, KNØJFE. Aug. 23, 1915-2115 GMT, KN1ADB, WN1OIE, WN2DBV/2, KN4QHG, MHB, KN5KNZ, HNW, KXD, KBH. Aug. 24, 1530-2115 GMT, KN1AYO, WN2CQQ, QEI/2, KN2ZMH, VWZ, KN4-RDV, QIG, PUJ, WN7MYI. Aug 25, 1645-2110 GMT, KN1CPB, BBI, CAU, KN2ZKL, YVJ, KN3AXH, KN4PPX/4, OPL/4, KN-8ETL, GHG, DYX, KN9GZS.

Ulf's letter continues "I have QSL's from 41 states and need Maine, Georgia, Alabama, Oklahoma, Idaho, Wyoming and Minn. for WAS. Now QRU so 73's es DX, Ulf.

Rundy, W3ZA/XV Saigon Viet Nam sends the following list of Novices heard. Most of his reception was in July since Rundy is in the process of changing QTH and in his spare time made a quick hop to the states. July 4, 1530-1630 GMT KN6TGZ, TPL, TWD/6UMV, UUE, YNY, YXQ, ZHJ, ZTA, SZB, WN7EOQ, GDD, GIF, HQP, IRH. July 7, 1550-1640 GMT KN4MON, KN5JAF, JFP, KN6TPL, TVO, UMV, VAW, VPF, YIS, YTQ, YXQ, ZQB, WN7GZT. July 8, 1500-1545 GMT KN6TVO, VKO. July 9, 1530-1600 GMT KN1CFQ, KN2UPD, KN5JNY, KN6VDU, VKO, YUJ/6, ZHU. July 14, 1630-1730 GMT KN1AIU, BZK, KN5JZR, KIZ, KN6VCR, VKO, VNP, VSS, YAT, ZJU, ZBB, KN8CRJ, KNØHXX, JUP. Many thanks again this month for sending in your list of stations heard.

Net News

Winston C. Tharp Jr. (Wink) 1420 Arch Street, Little Rock, Arkansas writes to advise your editor of a net, The Midwest Novice Net. It is primarily a Novice net with no high speed operation. Meeting time is 7:00 AM CST on 7152 kc. Better write Wink for more details because my puppy got to his letter when I wasn't looking and tore the blazes out of it. I never did find all the pieces!

Miscellaneous Items

Hazel Thompson, W5KEC is the president of The Women Ham Operators of Texas. She sent along a Novice sketch written by Estelle Black when she was still a Novice. It is titled *Whether Conditions*. "Beginner's viewpoint on ham radio. Such as one damp foot in quicksand. Very few have the time or costs, but the inclination makes the effort a friendly nuisance. And nothing is a nuisance of your liking, so...

... Other than the seriousness behind the reason, a beginner may feel his more comical sides. You first have to learn to talk in a different lingo, rhythm in metronome time. The brush-up on simple english is fair warning to simple arithmetic. By this time your resentment of self stupidity has out-weighed the indifferent original curiosity and you start giving yourself your own IQ and memory tests. When you find there are one or two simple things that simply do not soak through to an empty attic, bingo! The other simple things did. Jack and the Beanstalk, now it's beginning to grow."

Jim Weldon, W3CTO writes with the solution to the weak cw on the Hallicrafters S38C & D. He informs us the S-38's have a length of wire in the i.f. amplifier circuit, that causes it to oscillate on cw. Usually the i.f. amplifier oscillates too strongly and the incoming signal is swamped out. The remedy is to move the wire away from the grid a little bit at a time and stop just short of the point where the i.f. amplifier goes out of oscillation.

Joe Hester, KN5???, 142 Blossom Drive, San Antonio, Texas wonders what is the largest number of countries worked by a Novice? How about it fellows, who's the champ.

Marlen C. Anderson, Box 966, Conrad, Montana wonders why the antenna length of the 300 ohm doublet mentioned in the column two months ago is shorter than a quarter wavelength. The handbook says that a 15 meter antenna should be 22 feet one inch *in free space*. The wires in the 300 ohm twin lead antenna are not in space but rather, are enclosed in plastic. Therefore, it takes the signals longer to travel down the line and the antenna must be made shorter. This is called the *propagation velocity* of transmission line. The velocity of 300 ohm ribbon is .89. 22 feet, one inch times .89 is 19 feet six inches. Whenever the antenna is made out of transmission line it will be shorter by the amount of the propagation

velocity.

Brian "Henry" Williams, KN8DJZ complains that when he calls CQ DX, WN6 and KN6 stations come back to him. Ohio is DX to lots of California Novices, Brian. Next time call "CQ exotic DX", Hi.

Dan Porter, K4CWI, 607 Alabama Ave. North, Ft. Payne, Alabama wonders about the harmonic radiation of the T2FD and the possibilities of using the balun in the Globe Scout. As I stated earlier in the text, the T2FD is a prolific radiator of harmonics and can be used successfully on its harmonic frequencies. You might not have any TVI using the GS balun, but if you do, an antenna tuner will help quite a bit. The balun should load the T2FD quite nicely. The power rating of the resistors should be one fourth the rating of the transmitter input.

Ronald M. Litt, K2KMA, 147-24 70rd, Flushing 67, N. Y. thinks that the readers should make their letters a little more interesting rather than telling that KN9XXX has worked thirty states running ten watts from an XYZ 69 and loading up a doorknob for an antenna! How about it fellows, any opinions?

Help Wanted

Joe Hester, 142 Blossom Drive, San Antonio, Texas needs help with the code and theory. Ray Linnville, 1106 E. Tunis St., Pensacola, Florida, code and theory.

Letters to the Editor

John Aldrich, WINZZ, 103 North St., Lakeport, N. H. wonders: Just how does a fifteen year old ham go about convincing his neighbors that his rig is clear and that those nice black bars are generated in the owners TV set. I hope that the text this month helped you out John.

Arleigh Bruce Hughes, KN5KAJ, Box 861, Monahan, Texas is checking up. He writes:

Dear Don, I am building a ham station on a shoestring which is a little frayed and very soggy since my 8 month old son has been chewing on it. Your SSB Q5er looks like a life saver and I am building one. Are there any changes in the Q5er which were not in your articles? *Everybody that has built it thinks that it is pretty keen, Arleigh. No, the article stands as it is, with the exception that I found out that you can use a 3500 kc rock for both 40 and 80 (second harmonic).*

Jeff May, 3605 N. 12th Avenue, Pensacola, Florida is an "almost Novice". He emits with:

Dear OM, I just passed my Novice and I am waiting for my ticket to come. The rig here is an old HT-17 transmitter which will soon be modified and the power boosted from 30 watts to 55 watts. The hearing aid is an S-38 which will be sporting a "Q" Multiplier. The antenna is a 40 meter dipole about 25 feet in the clouds. I would like to hear from other fellows running HT-17's and I would like pen pals. 73's es gud luck, Jeff.

Wm. L. Patterson, KN4PXY/M—WP4, MACA-NSCG, P. O. Box 4864, San Juan P.R. is a sea going Novice. His letter states:



Ray Linnville, KN4 Short Wave Listener hopes to get his Novice ticket before long, but needs some help. Ray plans on using an S-38D receiver.

Dear Don, in your Novice section of the Aug. issue, there is a photo of a unit, Snortin Mortin. If this is a unit to enable an operator to hear his transmitter signals without using his receiver, that's what I'm after. Sincerely yours, Wm. Patterson. *It sure is Bill, and the plans for Snortin Mortin can be found in the March 57 issue of CQ (my first Novice Column).*

David R. Beck, KN4PBN, P. O. Box 786, Mulga, Alabama should have his General ticket by now. He tells us:

Dear Don, I have had my ticket for about 5 months now and have worked 25 states on 7 mc. My rig is a Globe Scout 40A. the Receiver is a Hallicrafters SX-99 and the antenna is a folded dipole 64 feet long and 40 feet high. I would like to hear from a radio club around Birmingham. My phone number is SState-75758. I will answer all letters and I QS 100%. Also, I will help anyone around Birmingham get a license. 73's Dave.

Dick Mulvihill, WN3IRY, 2 Rau Road, Pgh 28, Penna. read with interest, the column on the 15 meter band.

Dear Don: It seems as if I am one of those you mentioned in your article. I have been using a 40 meter dipole and a long wire and I find that it is lacking something. I wonder if you could give the address and name of the firm in the Midwest who sells the beam you mention. 73's Dick. *Sure. I wasn't trying to be mysterious Dick, I wasn't sure who it was. I just looked up the World Radio Labs ad. Their 21 mc three element beam sells for \$29.95. I personally think that it is a good deal. Write them for information.*

Mike McNeely, KN9HCK, 2818 Oakley St., Evansville, Indiana writes a nice newsy letter.

Dear Don: The ticket here is about six months old, so far I have worked 28 states, 20 confirmed. I use a Knight xmitter

[Continued on page 92]

DX

R. C. "Dick" Spenceley, KV4AA

Box 403, St. Thomas
Virgin Islands

Our heartiest congratulations go to the following stations upon their achievement of WAZ:

No. 362	W3WV	LEO C. YOUNG	40-150 (14th W3)
No. 363	W8UAS	JOSEPH S. YURKO	40-258 (17th W8)
No. 364	W5ADZ	BRADFIELD A. BEARD	40-266 (5th W5)

We also welcome these students as newcomers to the HONOR ROLL:

W7PHO	Bill	39-242	W4IEH	John	35-149
W2DEC	Urb	39-202	W3RSR	Bill	35-145
LU5ABL	Mike	39-127	WØQAZ	Leo	35-133
CN8JX	Glenn	37-185	H18BE	Burke	35-127
W6DIX	Ken	37-170	K4IIC	Clark	35-104
W3WPG	Hal	37-146	W9ETN	Ed	35-86
I1ZQ	Elvio	37-142	Phone only		
			W7PHO	Bill	39-181

As 1957 draws to a close we salute these DX amateurs and expeditions through whose efforts many of us have added new countries:

Aland Islands: OH1RT, OH1NK, OH1ST, OH2HG, OH2OJ, OH2RA, OH3AA, OH3OD, OH3TQ, WØAIW (OHØ)

Albania: ZA2ACB (DM2ACB).

Amsterdam Island: FB8ZZ.

Andorra: PX1FC (F8FC/F8JD/ON4AU).

Cameroons, French: FE8AE, FE8AH, FE8AK.

Cayman Islands: VP5BH (W4KVB, W4OMW, W8EFZ).

Comoro Islands: FB8CD.

Crete: SVØWQ (DL4AAP/W6GHM).

Easter Island: CEØAC.

Fanning Island (Christmas Is.) VR3B, VR3G.

Ghana: ZD4BQ, ZD4CM.

Goa: CR8AC, CR8AD (CR4AG/CR4AL).

Kerguelen Islands: FB8XX.

Laos: XW8AG.

Liechtenstein: HB1MX, HB1MQ, HB1UE, HB1KB, HB1OQ (/FL).

Maldives Islands: VS1HJ/VS9.

Monaco: 3A2BG, 3A2BT (G3FPK).

Mongolia: JT1AA.

Navassa Island: W2HQL, W2IWC (/KC4).

Norfolk Island: VK9AD.

Niue: ZK2AD.

Pitcairn Island: VR6TC.

Samoa, American: W6UOU/KS6, KS6AD.

Seychelles: VQ9VX (W6VX), VQ9HAY.

St. Martin, French, Dutch: FS7RT, PJ2MC (W6ITH), PJ2ME.

St. Pierre, Miquelon: FP8AA (K2CPR), FP8AR (W2HTI), FP8AS (W2EQS), FP8AY (VO1BD), FP8AX (VO1BF) FP8AP.

Thailand (Siam): HS1A, HS1MQ.

Timor, Portuguese: CR1ØAA.

Tristan da Cunha: ZD9AE.

Virgin Islands, British: VP2VG (KV4BB/W2CAA), VP2VB (Danny).

DX Jottings

JT1AA, Ludvik, Ulan Bator, Mongolia, continues activity from this rare (Zone 23) spot. His first contact (Sept.) was UAØKCA, first W QSO was with W3CRA while first European honors go to DL7AH. As we write JT1AA has made over 1500 contacts. "Firsts" in each W district follow: W1CWX, W2HMJ, W3CRA, W4BPD, W5ADZ, W6GMF, W7FZA, W8UAS, W9FKC and WØDAE. Ludvik was due to receive his QSL's from Peiping about October 15th. They will be flown to OK1JX/OK1MB in early November and distributed via bureaus. Ludvik does not have phone nor does he plan any. He does not speak any English and wishes to discourage requests of "please listen for my phone". If he does listen the transmitting station will only get a "hrd phone" type of QSL. The climate of Ulan Bator is rugged, being 5000 feet up, and ten hours of sleep per night is a "must". JT1AA will also be heard on 21 mc cw. Any requests, QSP's, etc. should go via OK1MB/OK1JX. Ludvik will be there until next September.

SVØWQ (DL4AAP/W6GHM) spent a busy week on Crete in October running up an amazing total of 3502 contacts, about 1300 of them being on phone. By snagging JT1AA, with assist from OK1MB, Stew was able to complete WAZ in four days from this spot which, we are sure, is the shortest WAZ on record! First W's in each district were: W1GAC, W2PJB, W3GOQ, W4BBP, W5LRY, W6ALQ, W7SGN, W8VQL, W9IVU and WØQGI. One W was worked on 3.5 mc: W4KFC. 119 countries were contacted. Nice job! His 100 foot antenna, only 11 feet off the ground (no poles around), worked fine on all bands except 21 mc where a vertical was erected which solved the problem.

CR8AC, sometimes signing CR8AD, continues to put a potent signal to all parts of the globe. turns out to be quite OK in Goa. Here's

the story from W6YY: I found out from my friend CR4AS that there was a potential ham in CR8-land who was ex-CR4AL. On writing him I received a reply saying that if I would send him a 7025 kc crystal he would get on the air, on 14050, using a Goa International Airport transmitter. He figured on using the call CR4AL/CR8 but apparently was licensed OK as CR8AC. He has a poor receiver but his transmitter, as attested by the strength of his signals, is a honey. Ex-CR4AG is with him which may account for the use of CR8AD at times. QSL's have already been received by W2LPE and others.

HL2AM, Osan, Korea, was quite active assuring everyone that he was "legal" and that word had gone to the FCC to that effect. Many worked him and a few "pink tickets" have been reported. KV4AA took a chance, on the strength of this info, and worked him. That evening we got a visit from the FCC. It was the first time in 30 years that they had visited the shack! (maybe we will learn someday but the lure of No. 275 was our downfall!). Anyway, the holder of HL2AM advises us that he was quite legally licensed by the Korean government and has the license, written in Korean, to prove it. He is Major D. A. Bartol Jr. and is now stationed at Hdqtrs 2nd AF/SAC, Barksdale AFB, Louisiana. The call HL2AM is now assigned to Major Floyd E. Barnes, Box 35, Hdqtrs. 314th AD, APO 970, PM, SF.

VS1HJ, Mike, visited the Maldive Islands in September, and was able to get on for only 15 minutes with an aircraft transmitter. Lucky contactee's were: W4TJ, W4CEN, W8HGW, VK3KB and VS1BB! Seems that Maldive tickets are extremely hard to come by. VS1HX flew to this spot, also in September, and was unable to get on. Another trip by VS1HX is scheduled for the second week of December. He says licenses are reserved for Maldive nationals etc. etc.

3A2BT got on from Monaco as scheduled, Oct. 6th to 12th. He ran 100 watts on all bands. QSL to G3FPK. Further word re Monaco comes from G6LX who writes: As you may remember I have operated from Monaco from time to time and am still licensed as 3A2AY. Recently I was in Monaco and visited 3A2AH who is a resident in the Principality. Both of us have been acting a joint QSL managers for 3A2 and I am sorry to tell you that our old friends, or enemies, the Phonies, are on the job again. The Ministry of Telecommunications in Monaco, controlling all ham activity there, is at present holding a very large number of cards, mostly from the USA, confirming contacts with unlicensed stations and I, myself, have returned over 300 of these through the various W'QSL bureaus. 3A2AH is now as-

DX Department Change

Dick Spenceley, KV4AA, has done a magnificent job of running the DX Department of CQ, making it one of the most interesting sections of the magazine. We were thus very sorry to learn of Dick's decision to finally give up the reins. All of us will miss his perceptive wit and kind hearted tolerance.

We are indeed fortunate in finding an excellent fellow to take over the DX Department, one that all of you DX men know quite well: Don Chesser, W4KVB. Don devotes altogether too much of his time to DX'ing and is in close touch with most of the top DX men around the world. He is the editor of the Ohio Valley Amateur Radio Association DX Bulletin and a past president of the OVARA. Don is primarily a CW man, that being where most of the DX lies. I see by the latest Bulletin that he has 4 countries on 160M CW, 75 on 80M, 131 on 40M, 239 on 20M, 112 on 15M, 19 on 11M, and 84 on 10M. That's a pretty good list.

So send your DX news and views to Don Chesser, W4KVB, RFD 1, Burlington, Kentucky. Good luck Don.

... W2NSD

Hiya Gang:-

My sudden elevation to DX Editor of CQ is a big surprise to everyone—including myself. It seems impossible to successfully succeed Mr. DX himself, Dick Spenceley, KV4AA, for Dick has done such a tremendous job. But we must carry on. With your usual fine assistance in supplying me with DX news and tips, I'll do my level best. I'll be on 14010 kc most evenings at 0000 GMT looking for hot news items; otherwise please send all DX correspondence, news items, tips, WAX applications, etc., to the following address:

**Don Chesser, W4KVB
RFD #1
Burlington, Ky.**



W4ML, Tom Stuart, Bayside, Va. stands at 39-288 worked.



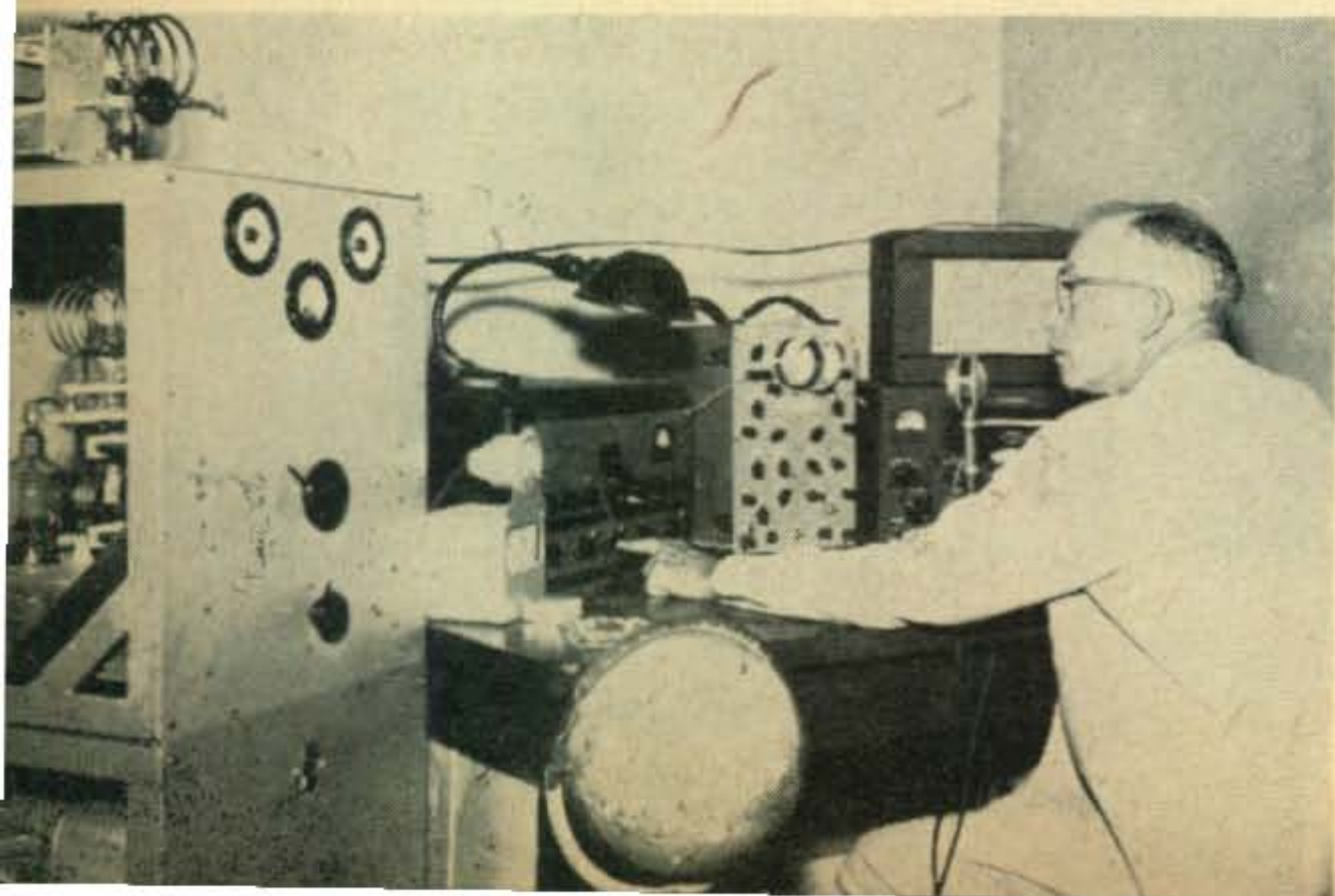
DX'ers Karl W8ZY, Doc W8WZ, Howy W2AGW and Frank W3CRA at Dayton.

suming the responsibility of sifting the goods from the bad and it is requested that all 3A2 QSL's be routed via 3A2AH.

To those who have recently worked PJ5AA and PJ5CA we wish to advise that this prefix is a new type of visitors or "vacation" license granted by the Netherlands West Indies government. PJ5AA, Aruba, and PJ5CA, Curacao, is the first of this series and both are held by Louis Varney G5RV/VP7RV/VP6RV/VP5RV/VP4RV. This license is renewable yearly and is valid for 15 days of each year. It is available to all ham visitors. Applicants can apply via the consul of their country. Visitors must take local exam for the operators license (25 guilders) which is good for life. This enables one to operate as second op at any NWI ham station with no time restrictions. Station licenses cost 25 guilders also and are renewable, at this rate, yearly. This seems to open the way for DX'-peditions to St. Martin and other Dutch islands.

Aland Island expeditions continue: OH1ST, OH1RX and WØAIW spent a weekend there in September working 516. Niilo, OH2XK, writes that he will be on from Aland between November 24th and December 2nd on all bands with 25 watts thanks to the donation of a G-210-TR rig by the John Geloso Com-

George Starkey, OA5G, Lima, Peru recently worked W1BB on 160 meters for a "first" on that band. George held the call W9BPR in '22 and W9FCJ in '40.



pany. As this takes in the CQ DX contest period CW will be used mostly but some phone will be tried. All QSL's will go via bureaus unless accompanied by 1 IRC (Surface mail) or 3 IRC's (Airmail).

VQ4EO plans a trek across Africa with a SSB station starting the latter part of November as reported by "Ether-Waves". Operation is definite from ZD1, ZD2, ZD3 and ZD6 with FE8, FQ8 etc. added if licensing permission is granted. QSL's are already being printed.

DM2ADL hopes to be on from SU-land during October and November. Call is not known as yet.

Norm, DL4RI (W1WIQ), says possibility is very good that he will go to Crete for one year starting early 1958.

HB1RS/FL was due on from Liechtenstein during CQ phone contest. He planned 14, 21 and 28 mc operation.

Possibility of operation from Vatican City as HV1AA looked good for W2IOP and W8DUS during CW portion of CQ contest. Hope they made it!

KH6CMM plans trip to KP6 for one month in January . . . MP4KAC on CW is NG and QSL's are being returned. Real MP4KAC *PHONE* should have SSB by now . . . W1EOL was VP9DB for three weeks in Sept/Oct . . . PJ2SA has been on from the Island of Saba. Counts same as PJ2M-. See QTH's...HL9KT (Verboten) has been heard on 14015, 1100 KMT . . . KV4AA knows nil re character signing SC1AW! . . . Faulty generator still limits activity of FW8AA . . . Ray, K2RAR ex-EL2X, will be heard from the Azores, CT2. Ralph, K4FDC, was also due there in October and will sign CS3 call . . . FP4AIO with W3CXX hope to be on from Navassa Island in December or early Spring. KP4AIO holds KC4AE call . . . F3CY now operates as 3V8CY in Tunisia. See QTH's . . . VQ9HAY, Seychelles, will have 75 watts on the air shortly . . . HKØAI, San Andres, is on the air again and has been heard many times on phone 14108 to 14160. Promises all QSL's in time, backlog etc . . . ZD3E, Jack, is new in Gambia and works on phone, 14180, 0745 GMT . . . CN8JX reports: AC4NC 14021 2210 GMT, AC3SG 14115 2355 GMT and ZC3AC 14116 0550 GMT . . . Marcel, XW8AB, was due to return to France in October . . . W4AUL reports that W4FCB/KS4, Swan Island, will be active until December or January . . . CN2BD is a phoney. Original CN2BD has been FQ8AY since 1953 . . . W4UAC/VP5, Turks Island, is at U.S. Naval base there and holds forth on 14 mc phone and CW . . . LU5AQ advises that Navy Dept. has applied for two radio ops for South Sandwich Islands assignment. If men accepted are hams we can expect activity from that spot in 1958 . . . In similar vein here is an ad appearing in the N.Z. Waikato Times re the Government Scientific Station on the Kermadecs: Vacancy No.

893 for Radio Technician, Raoul Island. Salary up to 850 pounds a year as merited—Duties: To maintain quarter KW transmitters, communications receivers, radiosonde — etc. Appointees leave New Zealand in approximately October—. We hope some ham snapped this up! . . . W8EZF, W4KVB and W4OWN consider FG7 expedition . . . Larry, SVØWP, says authorities may accept his idea of SVØWAA/SVØWZZ series of calls for americans so that duplications under the old system (SVØWA/SVØWZ) may be avoided . . . W6TKX reports HE9LAC, Schaan, Liechtenstein, on 14005 at 2337 GMT . . . FZ8A (?????) . . . VU5HA was worked by W8BKP and SP3DG. 14050, 0320 GMT (??) . . . ZS5JY seeks U.S. SSB contacts on 7 mc. He is on 7096 daily at 0400 GMT listening in the U.S. phone band . . . JA1JG, Showa Base, Antarctica, may be heard on 14023. He has a Vee beam to JA . . . Letter from HC8GI, Galapagos (Via W4IEH), states that any HC8GI on CW is NG. He does not know the code . . . VP8BS, Grahamland, Antarctica, QRT's in April . . . FP8AY (VO1BD) hope to be on from FP8-land every Summer . . . KL7PIV nabbed C3CG on 8/22, 14023 at 1730 GMT, T8. Gave QTH as Lee, Box 101, Peiping, China . . . SVØWE/Rhodes has been heard on 14019 . . . We finally have it straight on F2 Corsican calls. F2CA thru F2CZ is reserved for Corsica . . . QSL's for VKØAS, Mawson Base, Antarctica, may go via VK3KB and will be answered in 1958 . . . Further report on SVØWE (from W8YIN) says that Brad is now on SSB, 14 mc, 1800 to 2000 GMT, running 400 watts. QSL Box 564, Athens, Greece . . . Further word re W4FCB/KSD advises that he has VFO and VIKING II and is on nightly around 0600 GMT, 14025 to 14050. W4AUL can help if sked is desired. A3 is also used. See QTH's . . . FP8AR (W2HTI) and FP8AS (W2EQS) wound up their recent FP8 trip with 1492 contacts between them. 300 were on SSB and 18 were on 160 meters! . . . FE8AE has returned to France . . . DL4BL hopes to get on from LX-land with Globe Chief and S-85 . . . VE3AHU/SU, Rafah Camp, Gaza Strip, Egypt. with operators Art, VE3AHU, Tim, Ernie, VE6QK and Vince, VE1ACK were due to close down in October however Elvin, VE3BQL, will be taking over and continuing operations with another call . . . VS4JT advises that he will be in Sarawak two more years and there's a possibility that a VS5 station may appear on SSB in November (West Gulf Bulletin) . . . ZM6AS awaits mike to get on phone. Should be A3 by now . . . K6IWG/HC6 operated from the Isle of Puna on 28481 and 28607. He expects to leave for Viet-Nam around December and hopes to get on from there. See QTH's. Rudy, W3ZA, not in Viet-Nam hope to have some transmitting equipment there in mid-October and will make every

effort to obtain permission to put Viet-Nam on the air . . . As we mail this column (Oct. 17th) there has been no sign of PYØCV, as yet, who was scheduled to have been on from Trinidad Island and also from Martins Paz Island in the same group. He will be a new country and QSL's go via LABRE, Box 2353, Rio de Janeiro. He was "due" on October 15th and planned 30 to 40 day stay . . .

HONOR ROLL ENDORSEMENTS

(To October 15th, 1957)

WIFH	40-276	W7PHO	39-242	K6CWS	38-142
W6AM	40-276	WØQVZ	39-238	CN8JX	37-185
PY2CK	40-275	K2GFQ	39-237	W2HO	37-176
KV4AA	40-274	K2GMO	39-232	WØPGI	37-172
ZL2GX	40-273	WITYQ	39-229	W2SUC	37-172
W8PQQ	40-272	G3FXB	39-229	W4HKJ	37-171
W8DUY	40-272	W9UXO	39-228	W6DIX	37-170
W8KIA	40-270	W4ML	39-228	SM5KV	37-149
W9VND	40-270	W3VKD	39-227	W3WPG	37-146
W3KT	40-268	W2GVZ	39-225	IIZY	37-142
W6GFE	40-267	OZ7BG	39-224	W3UXX	37-137
W5ADZ	40-266	W5FXN	39-223	K60PI	37-112
W6TS	40-266	G3FKM	39-217	KA5ZS	37-77
W6EBG	40-266	W9VIN	39-216	KP4YT	36-144
W6VE	40-266	W2ZGB	39-216	W9VL	36-129
W9HUZ	40-261	WIBFT	39-210	W4IEH	35-149
W7GUV	40-261	W2ZVS	39-205	W3RSR	35-145
W8UAS	40-258	W5HDS	39-203	WØQAZ	35-133
WØELA	40-256	W2DEC	39-202	H18BE	35-127
4X4DK	40-253	VEIPQ	39-201	W2HAZ	35-118
ZL1BY	40-252	W6GMC	39-199	K4IIC	35-104
W6LDD	40-252	K20EA	39-196	W9ETN	35-86
W8KML	40-251	ZL4BO	39-183		
OEICD	40-248	K6ENL	39-183		
F8BS	40-245	W6TKX	39-175		
CE3DZ	40-243	W9ALI	39-172		
G3DO	40-237	SM5CCE	39-171		
W6BVM	40-231	W2PZI	39-163		
W6RLN	40-214	WØGUV	39-156		
W6LGD	40-212	K6IYJ	39-155		
W6ID	40-205	W9QNO	39-129		
W3WV	40-150	LU5ABL	39-127		
W3EPV	39-260	W8YIN	38-227		
W9LNM	39-258	T12TG	38-226		
W8JBI	39-257	VE3AAZ	38-216		
W2QHH	39-253	WIRB	38-200		
W9ABA	39-252	W6ZZ	38-172		
W2HMJ	39-250	DL4RI	38-156		
WIJYH	39-247	G4TM	38-145		

PHONE ONLY

PY2CK	40-263
CN8MM	40-258
W8PQQ	40-248
W8KML	40-228
W6AM	40-226
W9RBI	39-245
W6DI	39-239
W7PHO	39-181
G3DO	37-212
W3KT	37-203
G3FXB	37-178
WØHX	37-177
T12TG	36-186
W6CHY	35-142

Last complete HONOR ROLL appeared in the Sept. issue.

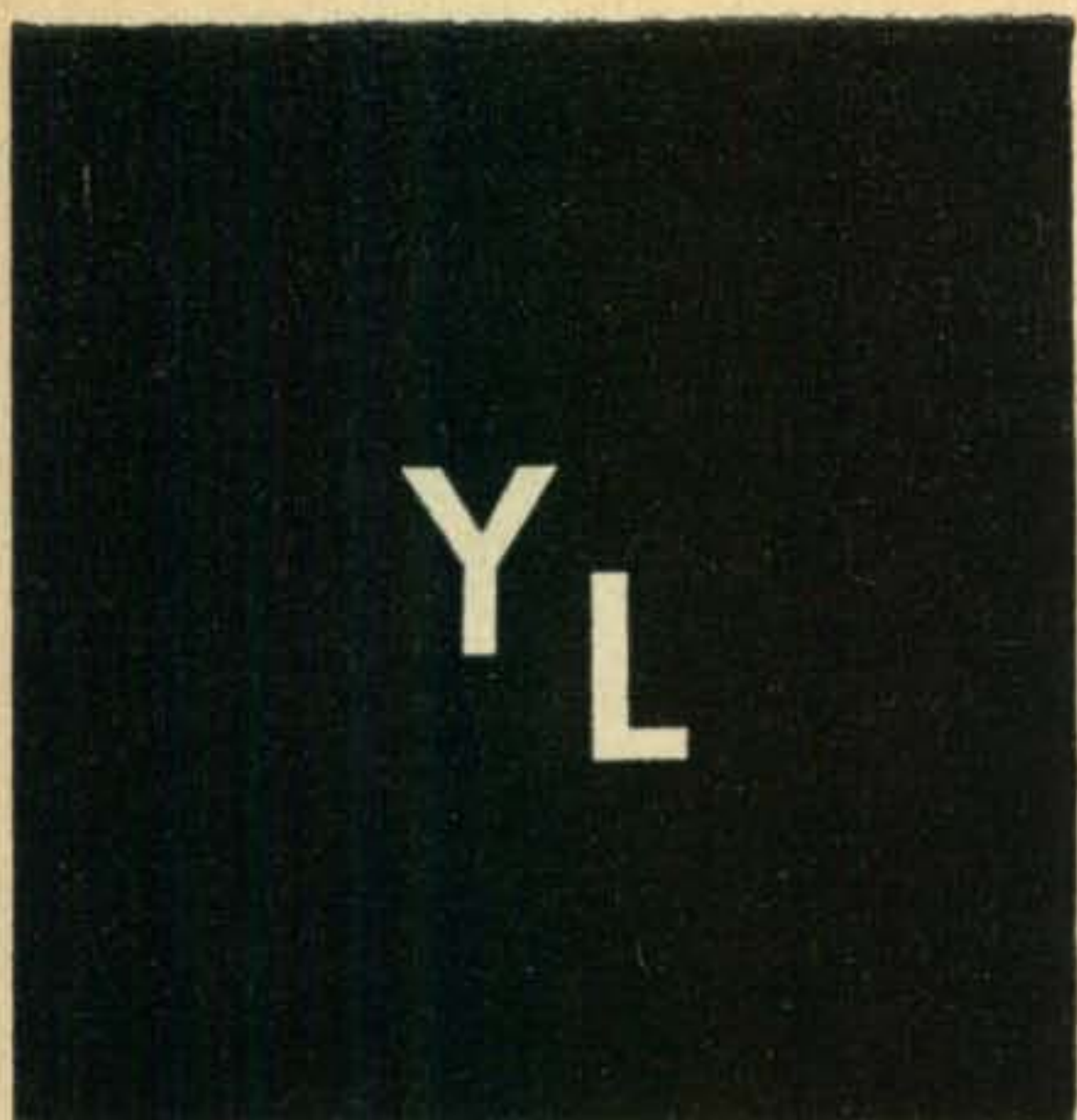
Addresses

AP2AD—Box 407, Karachi, Pakistan.
 AP2PR—Box 4074, Karachi, Pakistan.
 ET2LB—Via W2FIR.
 FK8AS—Achille, P.O. Box 151, Noumea, New Caledonia.
 FY7YG—Ray Cuisot, B.C.R. Cayenne, French Guiana.
 ET3RL—Box 399, Addis Ababa, Ethiopia.
 IS1GF—Fara Giovanni, Via Dante Nr. 119, Cagliari, Sardinia.
 JZØPA—Via VK6MK.
 SU1CY—Via R.E.F.
 SVØWN—Via W2QHH.
 TF Bureau—Islenskir Radio Amatorar, P.O. Box 1058, Reykjavik, Iceland.
 UA3BJ—Shishkin L.S. P.O. Box 898, Moscow, USSR.
 VP2LU—Fred Perkins, PAA/RCA, St. Lucia, BWI. Via Patrick AFB, Fla. (W1TBS)
 VP8BP—Via R.S.G.B.
 VR2AK—Box 59, Suva, Fiji.
 ZC4GT—Box 216, Famagusta, Cyprus.
 ZC5JM—R.A.F. Labuan, Br. North Borneo.
 ZE3JO/VQ1JO—Mal Geddes, Box 2462, Salisbury, So. Rhodesia.
 ZS3AC—Orangemouth, Southwest Africa.
 ZD6DT—(ex-VQ2DT) P.O. Box 98, Zomba, Nyasaland.
 ZS9R—Nick, Box 23, Francistown, Bechuanaland.
 3V8AO—Box 303, Carthage, Tunisia.

Thanks to W9BEM, West Gulf and North and South Calif. Bulletins, K2GFQ.

Flash: Korea OK now.

73, DICK, KV4AA



Louisa B. Sando, W5RZJ

212 Sombrio Drive
Santa Fe, New Mexico

2nd International YLRL Convention

"Firsts" are frequently being claimed in amateur radio. Two more such firsts can be claimed by the highly successful 2nd International YLRL Convention. Held at Chicago's Palmer House Aug. 30, 31 and Sept. 1, in conjunction with the 9th National ARRL convention, it not only drew the largest licensed YL attendance ever recorded, but it also was the first time that every call area has been represented in one YL gathering. The nearly 100 feminine Hams came from 24 different states, with DX represented by XE1MM.

Headquarters for the YLRL activities was the Crystal Room with registration, bulletin boards for QSL's and club certificates, and YLRL album and scrapbook on display. Here we gathered Friday evening for a spaghetti supper, courtesy of the LARKS who held a raffle to finance it. A game of "LARK-O" followed and helped the YLs get acquainted. Similar to bingo, we each had a card divided into squares which we exchanged with one another until we had a YL signature in each square. Then YL calls were drawn until a full row resulted in "LARK-O", and a prize.

Saturday morning brought many more YLs and at noon we gathered in the Crystal Room for the YLRL luncheon and forum. Places at the tables were set with ceramic nut cups bearing YLRL insignia and small pink camellias from Sacramento brought to the convention by K6ENK, Wanda, president of the "3c's" club.

MC'd by convention chairman Cris Bowlin, W9LOY, first speaker was W3CUL, Mae Burke, who has brought fame to the YLs by being the first YL to win the Edison Award for outstanding work in amateur radio. Mae estimates that she has handled some 325,000 messages. She holds 98 consecutive BPL awards and by the time you read this she

will have hit her aim of 100 consecutive BPLs.

Betty Frederick, W3PVH, YLRL's current president, presented W9LOY with a handsome scroll which reads:

"For unselfish service and conscientious duty, this tribute is presented to Cris Bowlin, W9LOY, president 1956. High ethical standards and sympathetic interest in Young Ladies' Radio League has earned for you a host of friends and the esteem of all its members."

Betty reported on her term as president and told of some changes she feels will help the organization. W9LOY in turn presented W3PVH, Betty, with one of the illuminated scrolls, both of which are the artful work of W2JZX, Vi.

W1QON, Eleanor Wilson, editor of QST's "YL News and Views," spoke to the YLs, as did this column editor. Drawing for the top YL prize was made and, unknown to anyone, sealed and held until the Sunday banquet.

YLRL Secretary W3LVX, Lolly Keller, and treasurer, K4LMB, Ethel Smith, gave reports and a lively discussion of YLRL was under way but had to be postponed to complete the program—a showing of color slides of some of the more interesting sections of the Southwest by W5RZJ, and some taken at the 1956 convention by W2EEO, Madeline. Many more prizes were won by the gals, some of which were donated by these clubs: N.Y.C. YLRL, Texas YL Round-Up Net, R.I. YL Club, LARKS, PARKA, Los Angeles YL Radio Club, Chicago YLRL, WHOOT (of Dallas), WAYLARC, and the Penn-Jersey YLs.

A trip to Chinatown for dinner and a bit of sightseeing Saturday evening was enjoyed by most of the YLs and some of their OMs. The family style dinner with numerous savory dishes proved most popular.

Back at the Palmer House a musical comedy trio entertained in the ballroom and many YLs participated in the midnight Wouff-Hong initiation.

With all of the ARRL convention activities set up on the next floor, the YLs joined in many of the meetings and forums and we all spent a good bit of time in the exhibition hall.

Sunday afternoon the YLs took a sightseeing trip of the harbor, courtesy of Newark Electric Co.

The big banquet for both conventions climaxed activities Sunday evening. The lucky YL, (????), whose name was drawn at the YL luncheon, received the top YL prize, a portable TV receiver.

Nearly 100 YLs

Our count of the YLs totaled 96; no doubt we missed a few and attendance may actually have gone over 100. Registration of the YLs included: W1's CEW, QON, TRE, HOY, SCS; W2's EEO, OWL; K2's AUE, LUR; W3's

CDQ, BIW, VLX, CAI, ZUF, PVH, URU, OQF/Ø; W4's VCB/3, UDI, UDQ, DEE, VKL/9, TDK, BAV; K4's LMB, AML; W5's DUR, JSV, RZJ; K5BNQ; KN5HFU; W6's QGX, CEE, WRT, NZP; K6's ENK, KUP; W7's LXQ, GLK; W8's ATB, UFZ, FPT, LIV, SPU; K8CHL; W9's GME, LYU, YWH, LDK, RUJ, STR, USR, HIX, SJR, RTH, LOY, QXI, UON, RTQ, MYC, WYJ, VTN, QV, IKS; K9's CQF, EMS, BWJ, CCO, GXX, EMP, CUM, CZQ, BUS, AMD, GMZ; KN9's GNQ, LMZ, GUB, IEM, IXD, ESB; WØ's MRJ, QXF, QXA; KØ's BFS, JAS, IBG, BRZ, KPB, BJZ; KNØ's JHG, KEN, JJW, GFM; XE1MM.

An interesting sidelight of the convention was the age span of the licensed YLs. Youngest YL we met was 11-yr old LaVonne Langarn, KNØGFM, of Minnesota, who took in the convention with twin YLs Janice and Janet, WØQXA and WØQXF. We also had a number of "grandmother Hams," some with snowy-white tops (but we won't tell their age!)

New YLRL Officers

Announced at the convention during Saturday's forum was the list of newly elected YLRL officers, who will take office on January 1, 1958. Congratulations and best wishes to all of them!

President, W7NJS, Beth Taylor, Manzanita, Ore.

Vice president, W4BLR, Kay Anderson, Richmond, Va.

Secretary, WØTYB, Betty Rogers, Denver, Colo.

Treasurer, W6QGX, Harryette Barker, Puente, Calif.

Publicity Chairman, W9RUJ, Mary Meyer, Brookfield, Wis.

Editor, *YL Harmonics*, W9STR, Betty Sandberg, Chicago, Ill.

District Chairmen: W1CEW, Mary Hinterland; K2DXD, Eve Reid; W4TVT, Claire Bardon; K5BNQ, Doris Anderson; K6KCI, Irma Weber; W7GXI, Marge Frazier; W8VRH, Mary Frist; W9YWH, Evelyn Tibbits; KØBTV, Kay Barclay; KL7ALZ, Geraldine Nichols; VE3DMX, Della O'Shea.

YLRL welcomes new members. Dues are \$2 a year, payable the first of January for the full year. Members receive copies of the bi-monthly publication, *YL Harmonics*, which gives news of members and other interesting items. All YLs, whether or not members of YLRL, are invited to join in the contests and nets sponsored by YLRL. For membership application cards write to the secretary, WØTYB, Betty Rogers, 1645 Garfield, Denver 6, Colo., or to your column editor.

YLRL is offering for sale to anyone interested Directories of YLRL members. The Directory lists all members, U.S. and DX, giving information on bands worked, station,

[Continued on page 94]



W7NJS, Beth Taylor



W4BLR, Kay Anderson



WØTYB, Betty Rogers

Prize Package

F. S. Harris, W1FZJ

Box 2505
Medfield, Mass.

The first transistors which were made available to the amateur fraternity (foisted off on, that is) were in most respects just not quite worth the effort. They worked, it's true, but they left a lot to be desired in the way of performance as compared to vacuum tubes.

The general trend had been to make use of them in applications where space, weight and battery drain were of prime importance and where a deterioration in the performance could be tolerated. Left alone under these circumstances the poor transistor would have died a natural and unheralded death. Many an engineer (pushed off in a corner with a box of transistors and the admonishment 'root hog or starve') would have been a willing and happy pall bearer.

Fortunately just about this time the proponents of transistors stopped saying "anything you can do I can do better" and started muttering something about "some of the things I can do you can't do at all". And then, just as the proponents of a civilization without transistors had started to agree that in some applications a transistor could be practical the old theme with modifications; "Some of the things you can do I can do better".

Where does all this leave you? Right at the head of the breadline with a handfull of goodies in one hand and a box of Centralab transistor amplifiers in the other.

I'm the last one to want to blow the horn for Centralab. After all they make a lot of things and if you want a pot or a switch or some such why naturally you buy a Centralab. Seems to me I remember they came out with a printed interstage coupling circuit about ten years before anyone else too. As a matter of fact, now that I think about it they do seem to be in there pitching whenever anything new needs to have some money and heartaches expended to make it practical. (Wonder what their ratio of successful to red ink projects is.) Anyhow the purpose of this midnight dissertation is to explore the use and functions of their latest gadget, namely the packaged transistor amplifier.

After rooting around in the shipping box (large enough to hold an O1'A) and finding enough printed matter to explain the function of Bell Tell's latest room temperature Maser, I finally found the amplifier. My first thought was "My Gawd, they goofed." Not so however, for in fact this little pea-sized thing with leads on the bottom is in fact IT. My obj? Find out what it's good for.

The first phase of a job like this is easy. They supply the circuits and operating parameters with the amplifier. All you have to do is

follow instructions and see if they were telling the truth and if so was it the unvarnished truth or advertising facts?

So I built the thing as per instructions (see fig. 1) and I measured the gain and I plotted the frequency response and what do you know? Plain unvarnished truth. Flushed with success and willing to believe anything, I immediately tackled the four stage job. The circuit for this one is pretty complicated (see fig. 2) requiring the use of a gain control which for reasons not stated, they failed to build in. Perseverance paid off however and the final assembly, while using a gain control twice the size of the amplifier, worked as if someone had spent a lot of time designing the bugs out of it.

So ends phase one. Advertising claims are verified. Amplifiers work as claimed in the circuits recommended (and supplied). If minituration is your goal, matching components are available.

Phase two. The hard part now begins. Granted the devices work as claimed. What do you do with them?

Finding a starting point is the first step in any job. In this case our starting point is a list of the potentialities of the amplifiers as follows:

1. *Input impedance* approximately 1000 ohms. Much too low for crystal microphone. Good for low impedance dynamic or reluctance type microphones. Good match for Microwave Associates crystal diodes.

2. *Frequency response* is limited to the audio and very low I.F. range. Eliminates use in R.F. circuits except as very low frequency I.F. amplifier or "Q" multiplier.

3. *Power drain* for TA-6 is in the vicinity of 0.5 ma. Well within the range available from rf powered supply. Use as rf powered cw or phone monitor practical.

4. *Size* cannot be considered as a factor. Units will fit anywhere. Small enough to be built into the barrel of a pen or the case of a microphone.

5. *Circuit* is well designed for ac applications. Built-in coupling capacitors prevent applications involving dc amplification. Field strength meters, etc., not practical.

So there's your start. From this you can com-

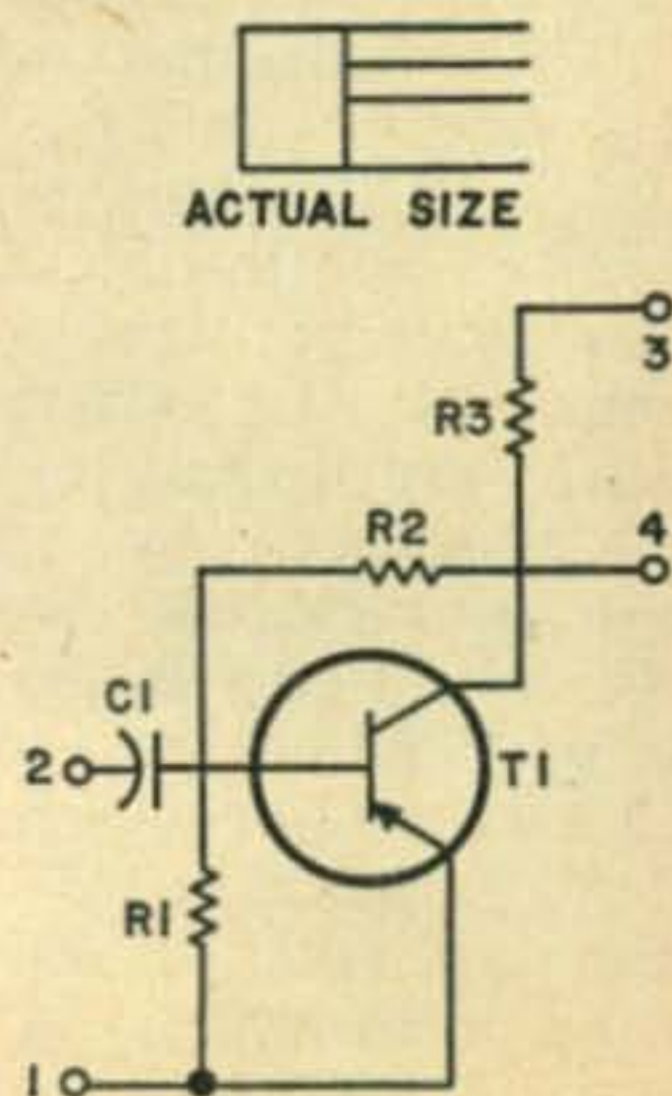
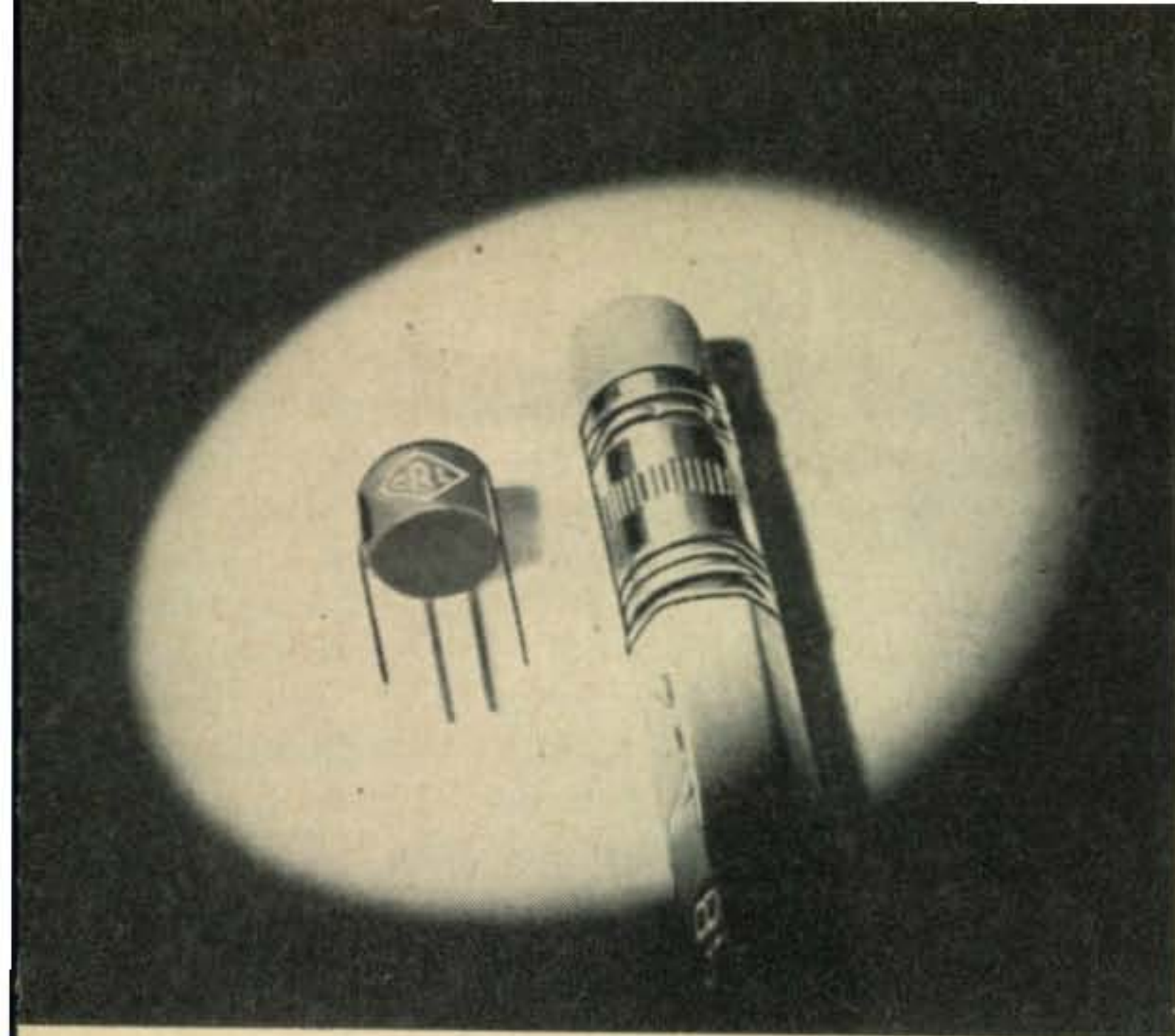


Fig. 1. The 15 meter tripler coil must be squeezed into an area that is already occupied by other parts.



The Centralab TA-6 is as small as the eraser on a pencil and contains a transistor, capacitor and three resistors!

pile a list of possibles as below:

1. RF powered cw and/or phone monitor.
2. RF powered Conelrad monitor.
3. Battery powered microphone preamplifier.
4. Low frequency "Q" multiplier.
5. Audio "Q" multiplier for getting rid of that last heterodyne.
6. Super selective low frequency i.f. amplifier.
7. Low frequency SSB generator.
8. Amplifier and modulator for portable QRP transmitter.
9. Plug in audio test oscillators for transmitter checking.
10. Voice operated relay for V.O.X.

Of course the above list does not cover all the possibilities. It does however, point up the fact that I could spend the next year or so trying all the ideas which show signs of being practical. So to work.

Item one; rf powered cw monitor. Materials

needed; one tuned circuit or other rf gathering device; rectifier (Microwave Associates of course) for getting my dc power; a transformer for feeding the output back to the input (phase convert to make it oscillate), an output stage (TA-7) and a speaker or other such to get the information back to my ears.

And then——while I'm raiding the junk box for the parts, an idea. While I'm doing this, there are a hundred thousand hams sitting on their hands. Half of them would like to build these gadgets. One quarter of them might even start the project. One percent of these might finish. One percent of the finishers might write it up, and one percent of these would be in English. These articles, if fed back to the original one quarter who started would give them the necessary push to finish theirs. The result? Lots of happy transistor users. The Problems? How do you get them started?

And So——A Contest
With prizes as follows:

First Prize

For the best article featuring the use of a transistor amplifier in an application related to amateur radio —————\$100.00

Second Prize

For the runner up article featuring the use of a transistor amplifier in an application related to amateur radio —————\$50.00

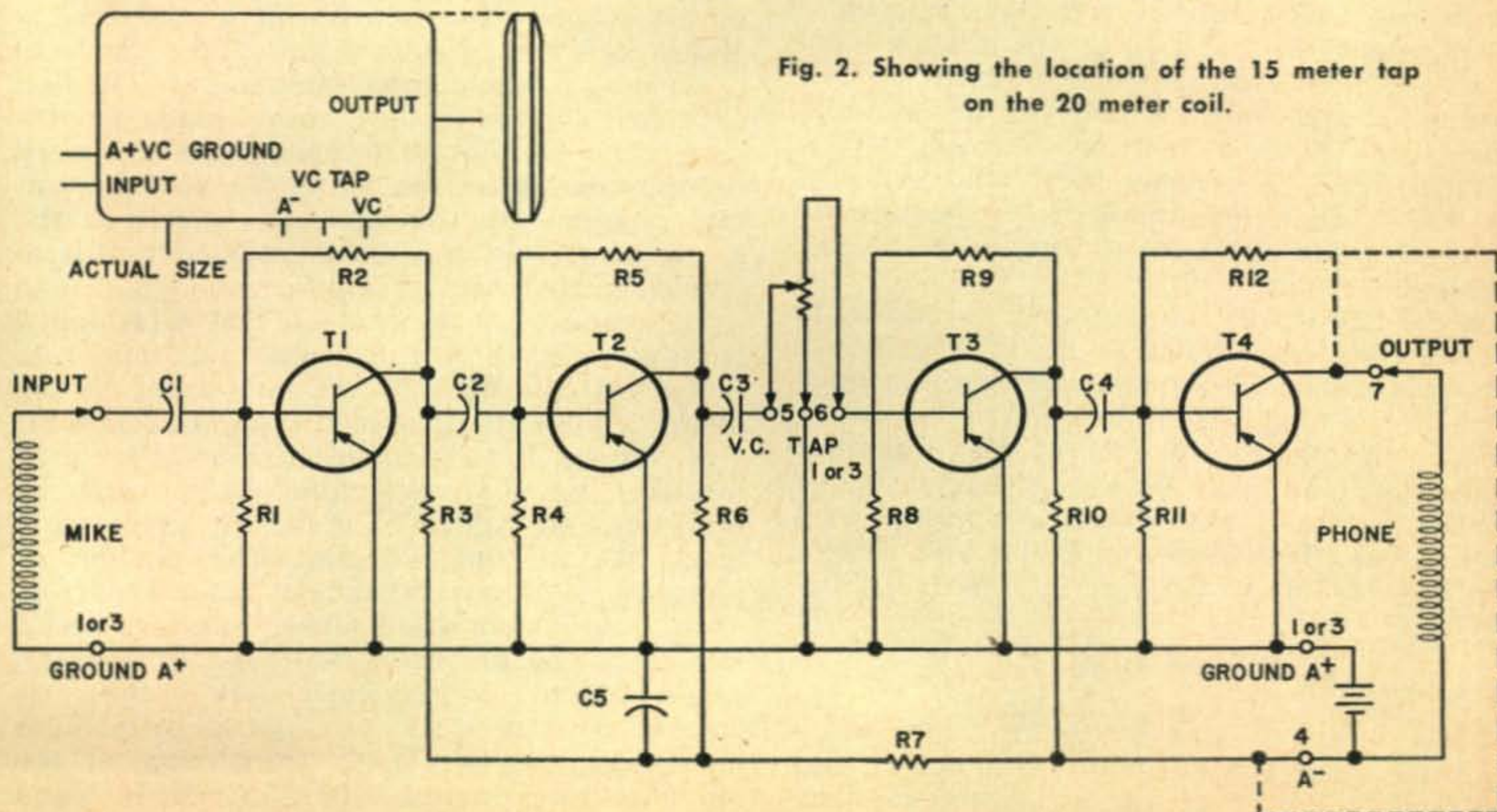
Third, 4th, 5th, 6th and 7th Prizes

For useable articles featuring the use of a transistor amplifier in an application related to amateur radio —————\$25.00 each

All prize winning manuscripts become the property of Cowan Publishing Corporation.

[Continued on page 83]

Fig. 2. Showing the location of the 15 meter tap on the 20 meter coil.



TRANSISTOR

Donald L. Stoner, W6TNS

P.O. Box 137
Ontario, California

This month CQ Magazine is delving into another phase of electronics that is of vital interest to many amateurs. Semiconductor products and transistorized equipment have been propelled upon the amateur scene with tremendous force. Just about everything that the amateur uses has been, or can be transistorized. Of course, there are exceptions such as that kilowatt final that you are using. Don't chuckle though. The day when that will also be accomplished is not too far away! Regency "broke the ice" with their transistorized mobile converter. This was swiftly followed by a barrage of construction articles on transistorized communication receivers, code practice oscillators, CW monitors, single sideband exciters, Q5'ers, "Q" Multipliers, and radio teletype equipment. CQ plans to present each month an article containing theory, a construction project, semiconductor news and new products of interest to the amateur. Future issues will contain construction details on a super efficient mobile modulator and transistorized DC to DC converters (a vibrapack with no moving parts). Bill Scherer's "Converter-ettes", the pride of the CQ Mobile Handbook, have been completely transistorized. No more drain on the automobile radio!

Above all, every attempt will be made to keep the theory "down to earth". Textbooks and engineering handbooks are recommended for more than a basic education in transistor theory, the theory section of the transistor column will be more or less a stepping stone to these books. I am particularly partial to a book titled "Transistors in Radio and Television" by Milton S. Kiver (McGraw-Hill, 56).

Crystal Diodes

Most materials can be divided into three separate classes, i.e. insulators, conductors, and semiconductors. You are no doubt familiar

with the first two, one does not conduct electricity well, while the other one does. Semiconductors, however, under certain circumstances will not conduct. Under other circumstances they will conduct very nicely. A perfect example of a semiconductor is crystal diode.

Let's take a closer look at this device. The crystal diode contains two terminals, the anode (or plate if you prefer) and the cathode. It functions much the same as a diode vacuum tube. If the anode is made more positive than the cathode, the internal resistance drops to a very low value. However, should the diode be turned around so that the plate is negative and the cathode positive the internal resistance zooms up and it makes a rather good insulator. Possibly you have heard of checking the *front to back ratio* of a diode. This involves checking the diode resistance with the positive ohmmeter lead on the anode (it should check a very low resistance) and with the positive lead on the cathode (it should check a very high resistance). Usually the greater the ratio, the better the diode. If a milliamp meter and battery are connected in series and then connected to the diode the positive lead on the cathode, the high internal resistance will allow only a few microamperes of current to flow.

This is how ac is rectified to produce dc. When the anode is positive (with respect to the cathode) the diode conducts. If ac is applied to the anode, the diode will conduct only on the positive half cycle. The cathode voltage, then, consists of a series of positive pulses or "half cycles". These pulses charge an electrolytic capacitor to the peak voltage which produces a "smooth" dc potential.

This typical semiconductor can be made in several different ways. Remember the hunks of gelenium that you used to buy? This was the foundation of the early crystal radio, in fact, I imagine some people still use them. The surface of the gelenium was probed with a wire until a "hot spot" was found. At this point the local radio station would come booming in. The first so called "fixed crystals" were made in this same way. The only difference was the factory did the fiddling for the hot spot, sealed the unit and charged you ten times as much as the gelenium cost. Nowadays, the usual method is to employ a small slab of *impure germanium* with a "cat whisker" as the contact. This is fashioned from phosphor bronze or beryllium copper and is illustrated in fig 1. If you very carefully examine a glass cased crystal diode this is what you will see. Pure germanium is a rather good insulator so *controlled amounts of selected impurities* are added to make the germanium react like a semiconductor. The amount of impurity is usually no greater than 1 part in 10 million which is something like a grain of sand in a bag of sugar. Anyway, it's a pretty small amount. A frequently used impurity is arsenic. This produces an impure germanium known as *type N*. Upon completion of the manufacturing process, a large current is passed

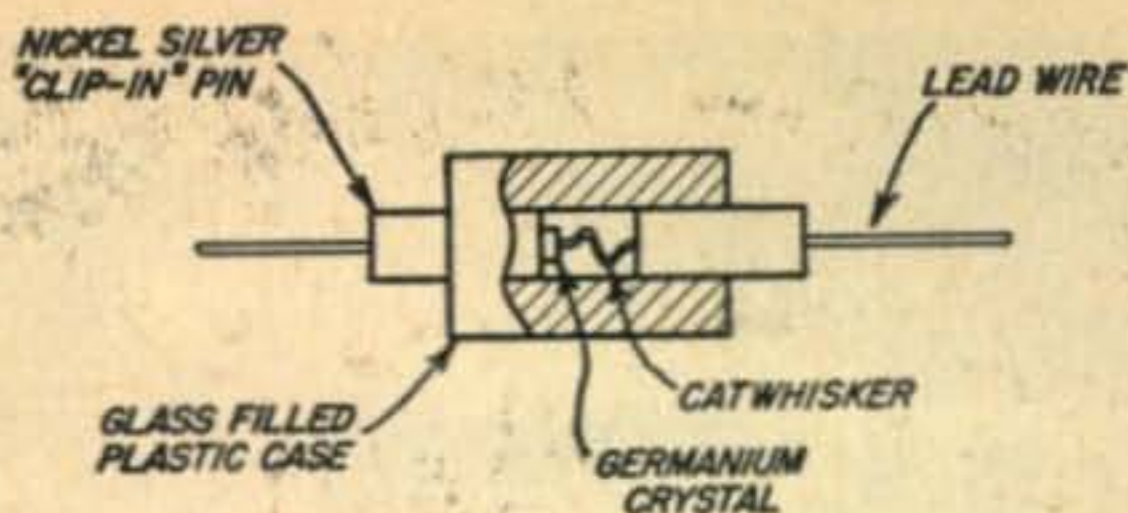


Fig. 1 Internal structure of a crystal diode
(Courtesy of CBS-Hytron)

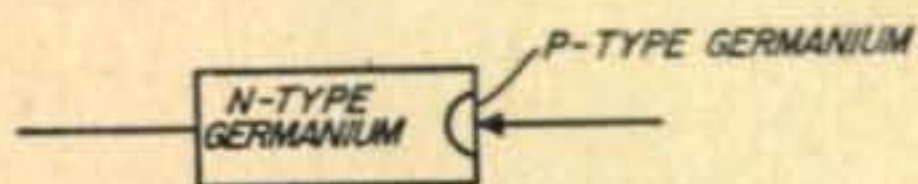


Fig. 2 A crystal diode showing the formed
P type region

through the cat whisker and the germanium. The heat produced by the high current causes a change in the atomic structure of the germanium directly below the cat whisker (fig 2). This area will be found to be *type P* germanium and the process that produces it is called *forming*. The thickness of the type layer is usually only a few atoms deep, but this is enough to make a good semiconductor. The reason that the slab is called type N germanium is the diode will conduct when this end is connected to the negative (N) end of a battery. This is the common "garden variety" that you find in the radio stores.

Conversely, a diode can be made that consists of type P germanium for the slab. Rather than adding arsenic to the pure germanium, let's toss in a pinch of indium, or boron, if you prefer. Now when the diode is formed, (the current is passed in the opposite direction) a very thin layer of type N germanium will be found directly below the cat whisker. This type P diode will have all the characteristics of the type N, but it will "work backwards."

Growing Crystals

One of the most fantastic aspects of semi-conductors is the *growing* of germanium crystals. The machine for accomplishing this feat is a marvelous device. It utilizes a small *seed* of germanium to which a *puller* is attached. The chamber is evacuated and the seed is heated and pulled. Impurities are alternately added to the chamber (remember the arsenic and indium routine?), and the temperature is adjusted accordingly. The end result is a long slender *ingot* of germanium that alternates between type P and type N germanium. This ingot is diced up and the wafers are further reduced to tiny blocks of germanium to produce diodes.

More important, if the ingot is cut up in such a manner so as to produce blocks of N, then P, then N again, a type N-P-N transistor has been created! More about this next month.

New Products

Although the Regency transistor amateur band converter has been on the market for some time now, I thought you would be interested in this first commercially available transistorized amateur device.

I have had occasion to use the Regency ATC-1 for about two months now and I have become its most avid fan. I was attracted to the ATC-1 out of necessity. My car radio simply did not have enough B plus voltage to operate a conventional converter. In fact, the B circuit is so weak that the audio stage kicks the voltage around, and it's operated Class A! That's pretty bad, boy. The converter is completely self powered by three one-and-a-half volt penlite cells and requires no internal connections to the car radio.

The ATC-1 was installed in my 57 MGA roadster and promptly fired up. My first impression was that it was sensitive. However, I faced the "facts of life" and admitted that a 24 inch car radio antenna simply was not enough at 75 meters. Installing a tuned whip wiped out any impression of low gain that I might have had. Signals pounded in from all over on all bands.

Mobile in motion operation was a revelation! The ignition noise was nil except on 10 and 15 meters. A noise limiter fixed that, but moderate signals were copied on 10 and 15 even without it! This is almost unheard of in this day and age of hot ignition systems. I attribute the low interference level to the complete independence from the automobile ignition system, of the ATC-1.

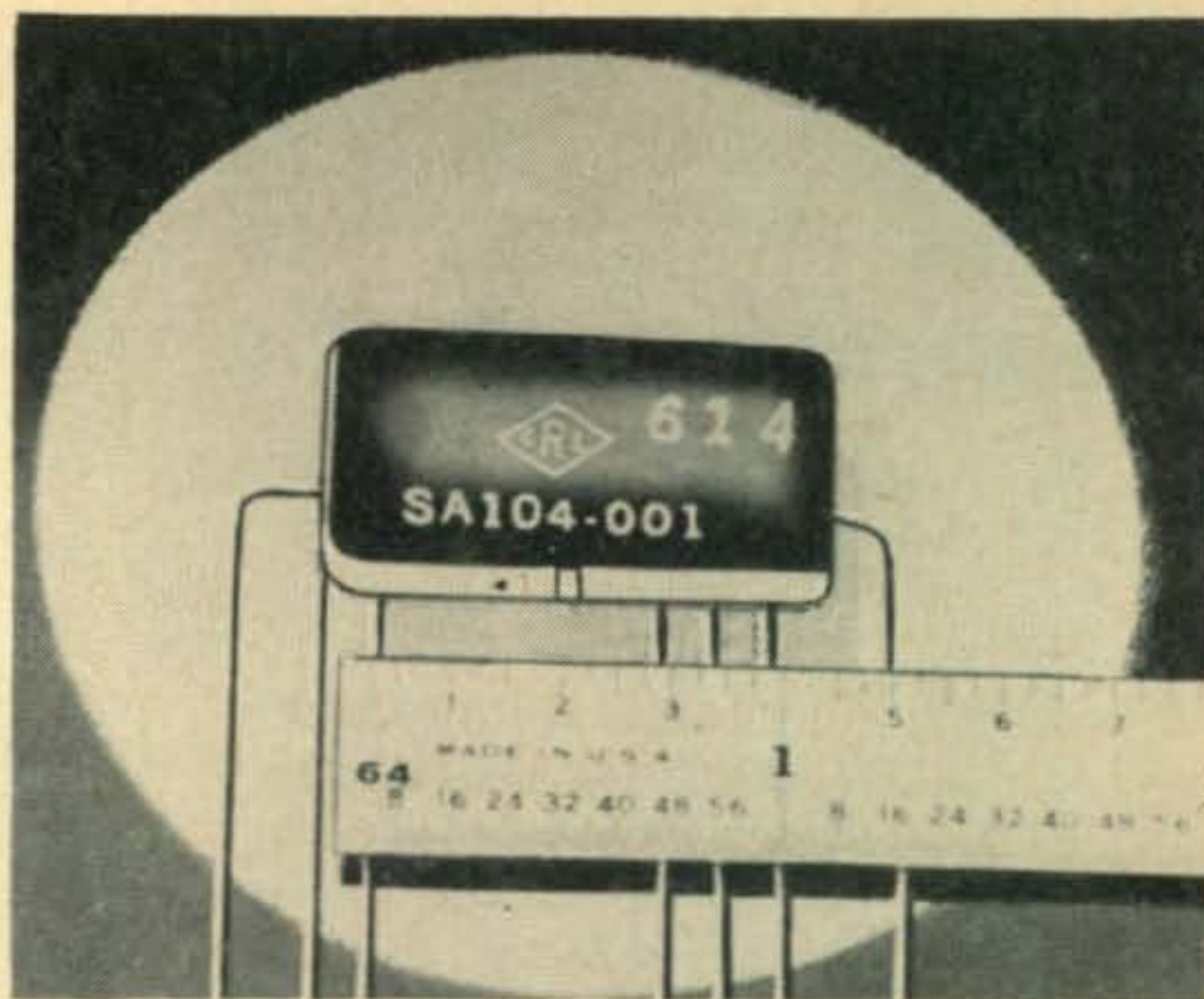
The transistorized "Q" Multiplier (another first for Regency) is a real life saver. It is so effective that signals take on the characteristic selectivity ring. It is possible to make the converter so selective that AM signals are hard to copy! The "Q" Multiplier may also be used as a bfo for cw reception.

A powerhouse in a pretty, pigmy, package. That's the Regency ATC-1 Transistorized amateur converter.



The ATC-1 is a superheterodyne which uses a Philco SB-100 surface barrier (PNP) as the oscillator-mixer. A 2N169A (NPN) is employed as a "Q" Multiplier for phone reception and the beat oscillator for cw and sideband reception. The oscillator circuit of the ATC-1 operates on the fundamental for reception on the 80, 40 and 20 meter bands. The second harmonic of the oscillator is used on 15 and 10 meters. Operating the oscillator on harmonics increases the stability and greatly reduces "pulling". For tuning sideband and cw stations, the "Q" Multiplier knob can be used as a "fine tuning". A diode is provided in the antenna circuit to prevent overload by nearby transmitters. Excessive signals at this point could burn out the surface barrier. This is avoided, however, by "back biasing" a diode to three volts. Any rf potential in excess of this will cause the diode to conduct, which shorts out the rf, thereby protecting the SB-100.

Needless to say, I am pleased to see a company progressive enough to bring out such a device for the hams. Although Regency has about a year jump on everyone, I think you



The TA-11 is about the same size as an air mail stamp and contains four transistors, five capacitors, twelve resistors. As Centralab says, "it is ideal for teeny-tiny spaces."

modulators, preamplifiers and tone generators. Write Centralab for more information.

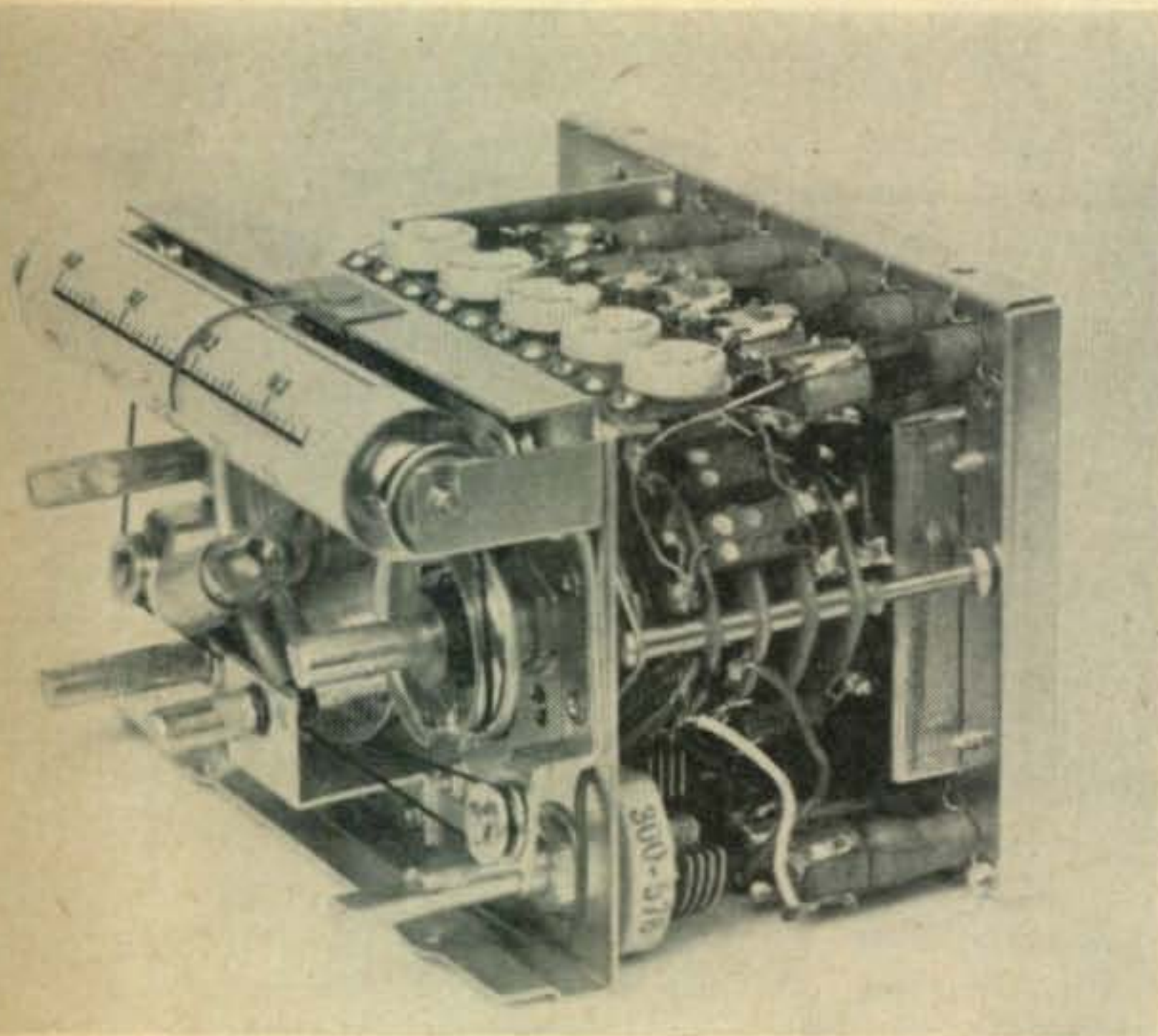
Transistor News

I am very "hopped up" about RCA's new drift transistor, the 2N247. This amazing semiconductor has an alpha cut-off of 30 mc (usable as an oscillator to 50 mc), making it very useful in amateur equipment. The thing that makes it a real "gasser" is the fact that it is available from RCA distributors for \$3.11! RCA has really broken the "VHF" price barrier! Several articles are planned using the 2N247 including a complete construction article on transistorizing Bill Scherer's (W2AEF) "Converter-ettes." A 10 meter handi-talkie has also been developed. Incidentally, RCA has just announced a true VHF transistor with an alpha cut-off of 250 mc at a cost most can afford. More about this next month.

Although it may be some time before you can walk up to the counter and buy one, Raytheon has announced the invention of the "Spacistor". Still in the research stage, the new device promises two major advantages over today's best transistors. Raytheon research scientists predict the spacistor will amplify at frequencies up to 10,000 mc! Also, because spacistors can be made from materials unsuited for transistors, they are expected to operate at temperatures as high as 500 degrees Centigrade. Invented after two years intensive research, the spacistor may take three to five years more research and development before it becomes commercially available. Get out your X-band gear boys, here we go . . .

That just about biases us to cut-off for this month. Hope you like the idea of a transistor column. Your comments and suggestions are solicited. If any readers have a pet circuit, send it in. It will be gratefully accepted.

73, Don, W6TNS



Converter confidential. Slugs and trimmers provide oscillator mixer tracking on all bands.

will be seeing more transistorized equipment for hams.

Centralab has done a beautiful packaging job with their TA-6 and TA-11 Packaged Transistorized Amplifiers. They are ultra midget amplifiers complete with transistors, associated resistors, capacitors, and wiring. Both amplifiers are the high gain, low noise type, 21 db for the single stage TA-7 and 73 db for the four stage TA-11. These units have essentially flat frequency response from 250 cycles to 20 kc. Both the TA-6 and TA-11 should find many applications around the ham shack as monitors,

What, Me Use A Signal Slicer?

Wayne Green, W2NSD

Wes Schum, W9DYV, chief op at Central Electronics was in town a while back. I have a lot of admiration for the job that Wes has done in popularizing SSB, for it was he more than any other one person who really put SSB on the bands. He came out with the 10A exciter for a ridiculously low price and got thousands of fellows on the air and introduced to this new and exciting branch of ham radio.

At any rate, Wes and I were talking about this and that when he asked me what I was using for a receiver. I told him that I was using the National 300 and thought that it was an excellent receiver for sideband since it was plenty stable and had the product detector built in. Wes snorted, "You think that is good? Try using a Signal Slicer with it and really hear something!"

I gave Wes the news that the "300" had an i-f of 2215 kc and the Slicer was designed for the usual 455 kc i-f. This was the reason that I hadn't given much thought to using any of my 455 i-f gadgets such as the Panadaptor, Q-Multiplier and Slicer. Wes looked smug and pulled a small lump out of his pocket, "Here, this'll do the trick." It was a small chassis with one tube, a couple of coax connections and a plug. It seems that the unit was designed to plug into the back of the Central Electronics Signal Slicer and converts the 2215 kc i-f of the "300" to the 455 kc of the Slicer. Clever.

By talking fast I managed to end up with the gadget, which got hooked into the "300" that evening. Gadzooks! Wes wasn't exaggerating a bit, the Slicer makes a whale of a difference. Where before I had to do quite a bit of fancy retuning to switch back and forth between the upper and lower sidebands of a station, now all I had to do was tune in the station and flip the big switch on the Slicer from "Upper" to "Lower" to "Both" and I could dodge QRM on SSB, tune in *any* AM station, no matter how much QRM was sitting on him, give intelligent reports to SSB stations who were actually transmitting something a lot more like DSB, and have an easy time pulling through the real DSB stations. Since hooking the Slicer in I've never had it back out of the circuit again, except on the VHF's where QRM is seldom a problem and SB is still a rarity.

The additional cost of the AP-300 converter (\$12.50 wired) and the Signal Slicer (Mod. A—\$74.50 wired, \$49.50 kit; Mod. B—\$99.50 wired, \$69.50 kit) is small compared to the improvement that they afford. ■

Prize Package [from page 79]

Decisions of the Judges will be final. No manuscripts will be returned unless accompanied by stamped self-addressed envelope. Style sheets are available from Cowan Publishing Corp., 300 West 43rd St., New York, N. Y.

Address all entries to F. S. Harris, c/o Microwave Associates, Burlington, Massachusetts. Inquiries on transistor amplifiers to Centralab, 900 East Keefe Avenue, Milwaukee 1, Wisconsin.

Go—man——go. ■

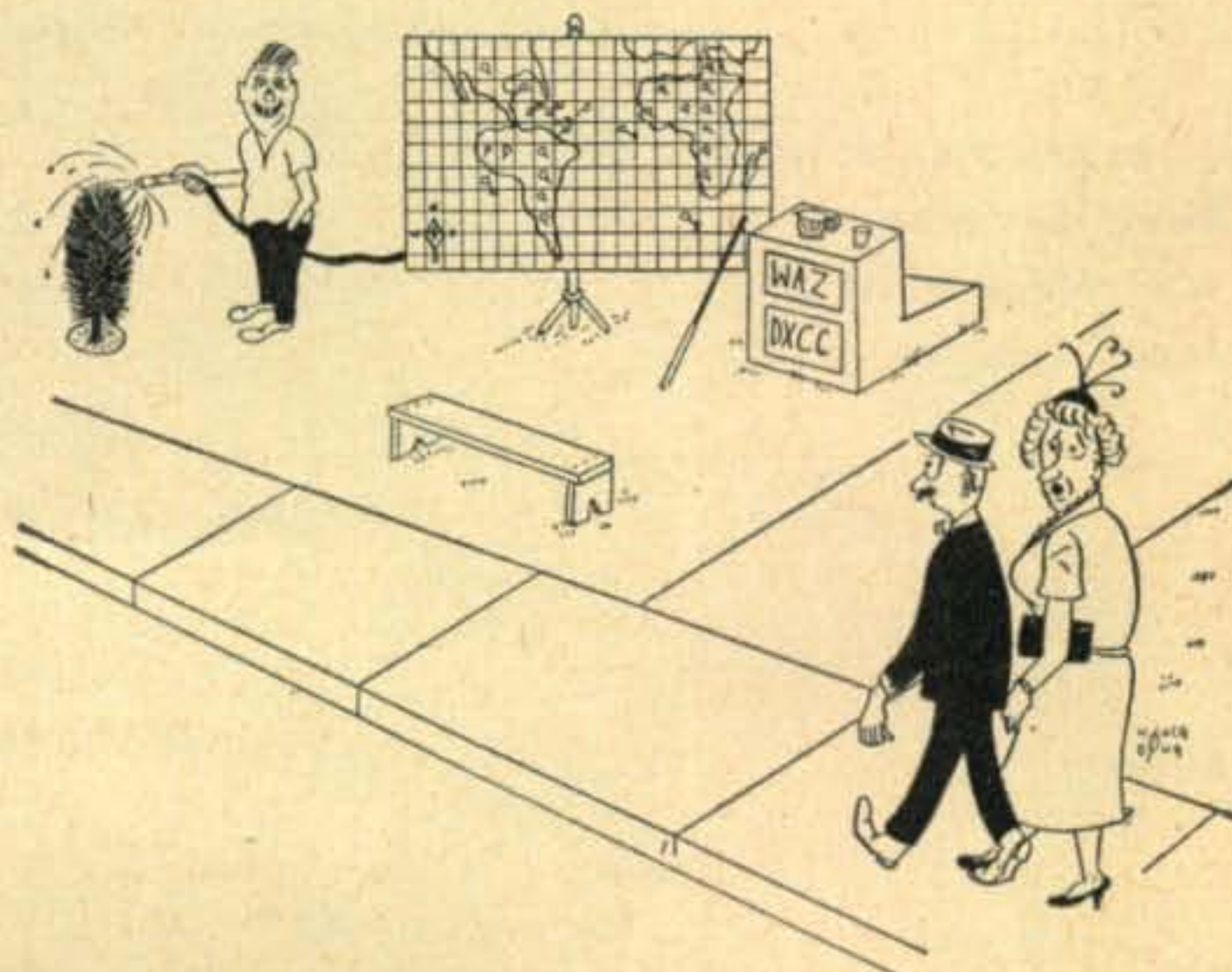
New Tecraft Converters

Wayne Green, W2NSD

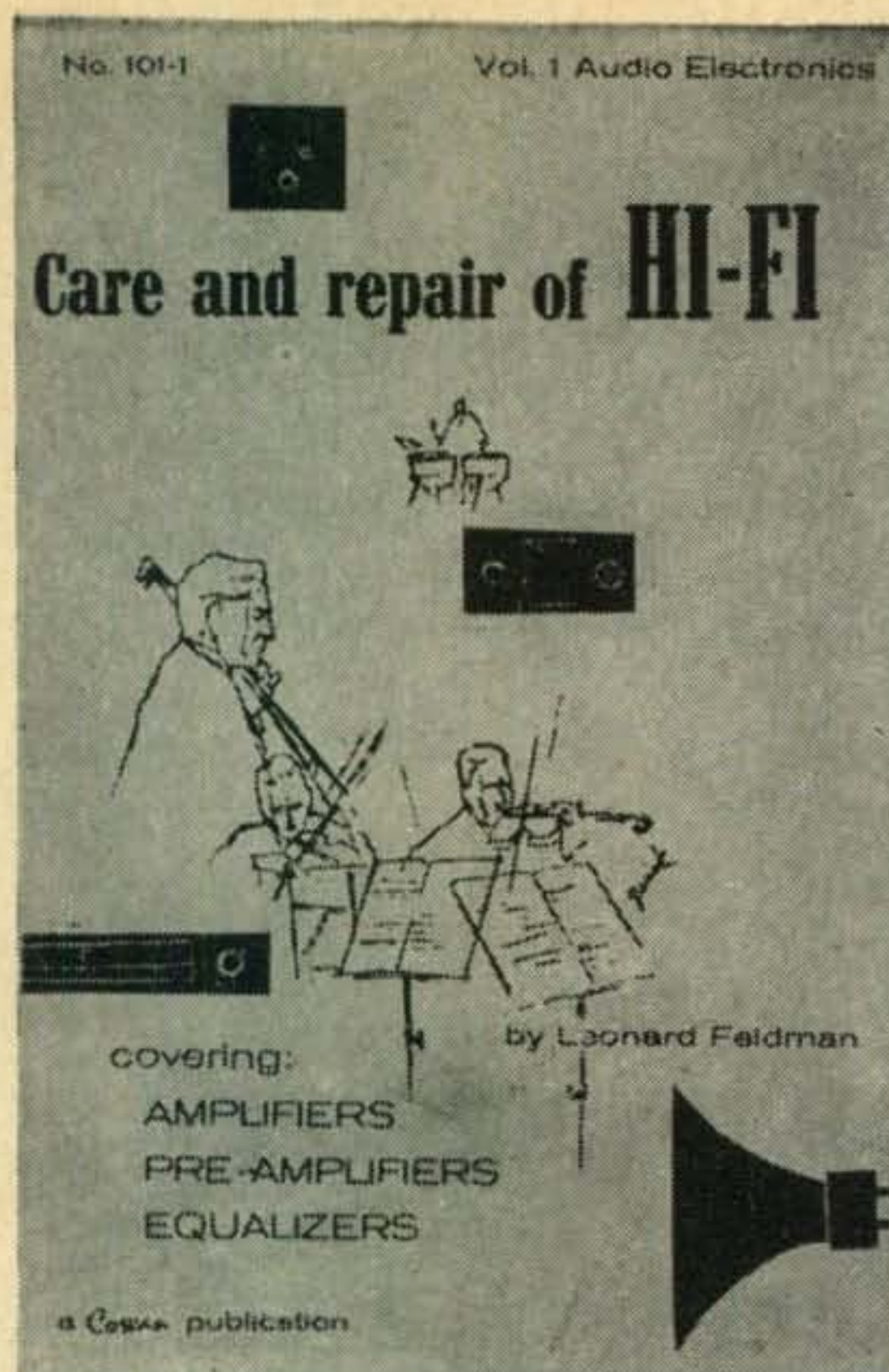
The new Tecraft VHF converters have some interesting innovations. One problem that frequently causes frustration to VHF'ers is feed-thru of signals on the i-f frequency. This can be particularly trying when you are using something like 20 meters for the i-f channel. Many ops have this problem and have to try to decide whether the incoming signal is on two meters or a local on twenty. Tecraft has introduced a tuned i-f trap in the antenna input of the converter which will attenuate these signals and assure you of hearing only the signals you want.

Another misery that pops up with a real hot converter is overloading by a nearby strong signal. Tecraft has built in a variable rf gain control so that the gain of the converter could be reduced and the cross-modulation eliminated.

Built to sell in the medium price bracket, this converter gives all of the gain that most two and six meter men can possibly use. Darned good for \$44.95. ■



For heaven's sake, don't ask him if he's worked any DX lately!



How's Your HFK*?

Do you hem and haw when the subject of HI FI comes up, or do you change the subject? Now you can astound your friends with your newly acquired knowledge on the latest in HI FI.

Get a copy of "Care and Repair of HI FI". This nifty volume contains the latest dope on amplifiers, preamplifiers and equalizers plus a buyer's guide of component manufacturers!

Publication date, January 15, 1958

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Publication price — \$2.50.

This offer expires January 30, 1958!

CQ-1

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Prepublication price expires January 30, 1958.

*HI FI knowledge, natchery!

VHF [from page 61]

with new interest every day. Active stations at the moment are: K4PHX, K4MVM, W4RST, K4EMY, K4RUF, W4NEG, W4UVU, and one YL-K4JJN, Linda. The most popular frequency is 50.5 mc. However, most stations have many crystals and I have a vfo almost on."

"Transmitters run anywhere from ten to one hundred watts, with 40 watts being about average. Receivers are of all types, no two being alike. On the average they are very good. Most of the antennas are four element jobs, with a couple six to eight element jobs; average about forty feet high and rotatable."

Six meter mobile is also coming to be. In a very short time, there will be at least three mobile stations and maybe five."

"At the moment, two meter operation in the area is rather dead. I was on two for several months, however when six came into being, two went out!! I am all for letting the technicians operate on two meters."

"Any of us will be happy to hold skeds with anyone." *Congratulations on the fine activity down there in Athens, Jim. Keep those boys a-humpin' on six meters, but let a few of them get on two meters also.*

Amarillo, Texas The wide open spaces beckon us on toward another VHF man in that territory. Ray Thrower (K5BSR) sez:

"Of late my interest has been stirred up VHF and UHF wise. Although I have not worked any VHF before, I am seriously considering the purchase or construction of some gear."

"The primary purpose of my letter is to let someone know there may soon be a new voice 'way up there'. If anyone reading your column has some small, low power stuff they would be willing to swap in order to help another 'ham' get on in that QRMless world, I have several dozen used 416B's and a few 417A's that I would be very generous with in a swap."

"I'll consider anything, naturally; transmitters, receivers or converters, antennae, gold bricks, stamps, pieces of moonrock,—. Need I say more on how badly I would like to get on VHF-UHF. *Now how could you use the moonrock.* Also would consider March and April 1956 issue of 'CQ' magazine."

"Anyone remember OE13RT, Linz, Austria on twenty meters? *Where? Never heard of it.* That's me. And all those latent QSLers know where to send those cards now." *Keep pushing Ray, you'll make it yet. Good luck on VHF and hope we see you on the air soon.*

Albertville, Alabama A quickie from E. Watts (K4KYH):

"Six meter interest in North Alabama is growing fast."

"I am wondering if any of the readers of your department have successfully modified the DX-35 for six meters. If so I'd appreciate the information." *O.K. youse guys who have done it, let the man hear from you.*

Republic of Ireland Harry (EI2W) sends the following very interesting information:

"From October 1st, 1957 to February 1, 1958 EI2W will be operating every day on the FOUR and SIX Meter Amateur Bands. Stations desiring a First Contact with the Republic of Ireland should call between the hours of 1200 GMT and 1600 GMT."

"The MUF is already running very high and it is hoped to be able to make first contacts on these bands during the next few months. PLEASE call EI2W when the MUF is high. The bands will be monitored every day for calls."

"EI2W is crystal controlled and uses telephony on the following frequencies: Four Metre Band—70.662 mc, Six Metre Band—50.016 mc., 144.80—Two Metre Band."

"EI2W is the only station in the Republic of Ireland on six metres so far and all equipment has been tested and ready for operation. He will also be looking on the South American and South African bands for cross band contacts." Address—Henry L. Wilson, "The Limes" Plunkett Avenue, Foxrock, Co. Dublin, Republic of Ireland. *Wonderful news Harry, and there most certainly will be a lot of people looking for you. Good luck!*

MOBILE HIGH POWER! 10 to 12 decibel gain

over conventional 25 to 30 watt rigs

- **under dash unit**
4½ high, 11¼ wide & 11¾ deep
- **completely metered**
including auto gener. voltage
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3.5 to 30.0 mc. 400 watts input
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just plug units together
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21 ft. mobile harness with plugs
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- **your present rig**
serves as the rf exciter & audio
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for easy nite operation



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ELMEC - 400

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For further information, check number 21 on page 124.

ATR-11 RCA TRANSCEIVER

2.4 Mc-6.7 Mc/S superhet rec. and 4 channel crystal controlled or master oscillator controlled or any combination of either MO control or crystal control totaling 4 freq. Complete with 12 tubes and low freq. tuner 200-400 Kc.

Exc. **\$29.50**

12V dynamotor for above with dual output 40V 200 MA and 225V and 125 MA.

Exc. **\$14.95**

Both units above **\$39.50**

ANTENNA—Monel Metal

TRAN. REG.—Telescopic Extended 8 foot collapsed—17½" x 1½" Dia.

Brand New **\$1.69**

BC-659 FM Receiver-transmitter, xtal controlled, two channels, freq. range 27-38.9 Mc, 13 tubes, built-in speaker, dual meter for testing filament and plate circuits.

Exc. **\$14.95**

BC 620

Same as above except less spkr. and 20 to 27 Mc. **\$6.95**

BC 603 Ten Channel Push-button or continuous tuning FM RECEIVER 20 to 28 Mc complete w/tubes, speaker, squelch circuit, 12 volt power supply.

Exc. **\$14.95**

BC 683. Same as above except 27 to 38.9 Mc. **\$24.95**

BC 604—10 Channel, 30 Watt Crystal Controlled 20 to 27 Mc Transmitter, Complete with tubes and 24 Volt Dynamotor. Ship. wt. 30 lbs.

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AMPLIFIER, complete with 2-6V6, 6SL7, 6SN7, 6X5. Ship Wt. 10 lbs.

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Heterodyne, crystal calibrated, modulated with calibration book 125KC to 20,000 KC—Exc. **\$49.50**
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T-20, 4 to 5.3 MC—T-21, 5.3 to 7 MC. Used.....	\$3.95	NEW.....	\$5.95
3 to 4 mc. like new			\$5.95
T-23 100-156 MC	New	\$13.95	
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Bendix 100 Watt Transmitter

Easily converted to 10-20-40-80 Meters. Has four separate output tanks. One 4 position selector which changes the ECO IPA and output tank simultaneously. Uses 2-807 4-12Sk7.

Complete w/tubes **\$22.95**

MP-28 modulation and Power supply for the TA-12 transmitter. Complete with 4 tubes. Dynamotor has an output of 540 V. DC at 450 ma. Input at 28 V. DC.

With dynamotor **\$14.95**

RA-10 DB Bendix ship to shore communication receiver and direction finder. 150 KC-1100 KC-2 Mc -10 Mc complete with tubes and dynamotor. Exc. **\$24.95**

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Dept. Q, PHONE: Calumet 5-1281-2-3

RTTY [from page 64]

purpose of which is the training of operators who wish to obtain Federal licenses, either commercial or amateur." The instructor in the course is Charles S. Overmier, W6YNS, of Lakewood, California.

Here and There

W6AEE says that he is taking a course at UCLA so he won't be on as much as usual. Merrill had a round-table with W5YM, W6-FLW, WØBP, and W7CO on 7128 kc. Other contacts on 40 meters were with W1BGW, W2JAV, and W4EHU. W5YM is the radio club station at the University of Arkansas, and it is equipped with a Model 28.

W2DXD writes from Buenos Aires. His next stop is Brazil. When he gets back, Bill expects to re-locate in Upper Saddle River, New Jersey. W2ORX reports a large increase in activity on the Livingston net. Dick now has up his 80 foot tower and is writing an article on Single Sideband Frequency Shift Radioteletype. The Livingston group has also developed a 2 meter fixed-frequency receiver that includes tone indicator lamps, carrier indicator lamp, cathode follower to feed the tu, a bfo for 2 meter fsk, and squelch. Circuitry and photos will soon be available, Dick says.

Frank Taylor, W2KXT, gave a talk on RTTY at the local Radio Amateurs of Greater Syracuse (RAGS), and reports the following active or sparking: W2ABV, W2KCR, W2-KXT, W2UBL, and W2WNN. (Did you notice the October cover of QST showing W2KCR and his Model 19?) W2KCR has 400 watts, a Model 26, and the converters are of the FRA and PAT type.

OD5AY of Beirut, Lebanon, says that he and another fellow are going to attempt to set up an amateur RTTY circuit between Lebanon and Saudi Arabia.

IIWAV of Milano, Italy, reports the availability of German and Italian teleprinters in the surplus market over there. He is looking for some information on the BC-918-B "recorder-scanner."

W5OOL of Tulsa, Oklahoma, a member of the keyboardless-12 club, would like to sell his Model 12 for \$15. (So would a lot of others, OM!)

WØOOT/KL7 writes from Barter Island, Alaska. He has a KW1 and 51J4 which he hopes to use on RTTY soon. He would like to see more articles on converters in CQ. (So would I, Nelson!)

W1PBS, in Barre, Massachusetts, is in the process of fixing up a 14 typing reperforator and a 14 TD. A kilowatt final is also in the works. Dave was instrumental in getting nearby W1TMZ of Barre and W1VEG of Gardner going on RTTY.

KNØJHF, George John, please drop me a card with your QTH.

For a Christmas you will remember,
tell "Santa" about the

MOSLEY *TRAP* *MASTER*



2 element, 3 band beam for 10, 15 and 20 meters. Forward gain 5.5 db., front-to-back 20 db., SWR 1.5/1. Max. element length, 28 ft. Boom length, 7 ft. Wt. 34 lbs. Converts to Model TA-33 easily.

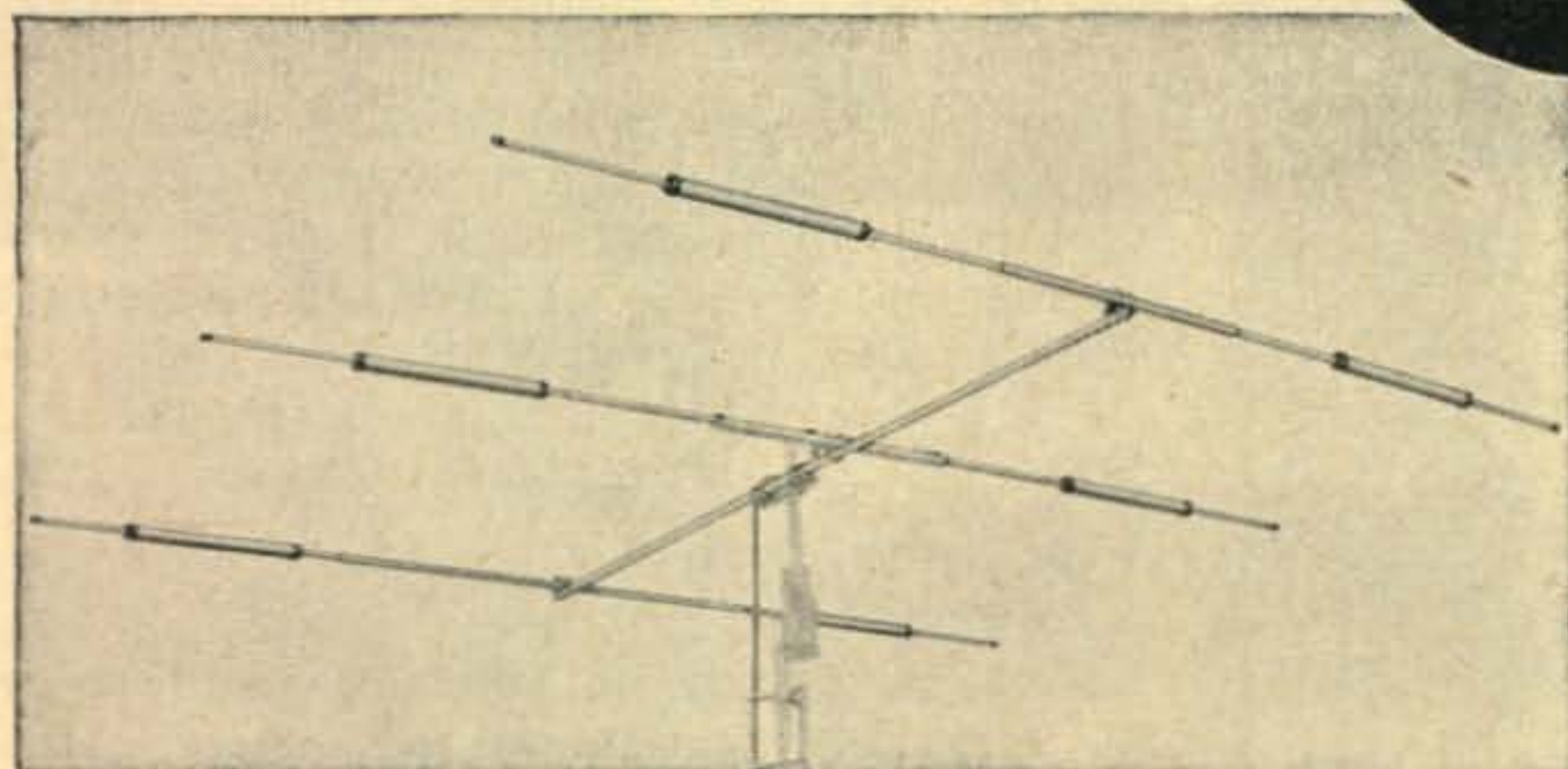
**Model
TA-32**

\$ 69.50

3 element, 3 band beam for 10, 15 and 20 meters. Forward gain, 8 db., front-to-back, 25 db., SWR 1.5/1. Max. element length, 28 ft. Boom length, 14 ft. Wt. 47 lbs.

**Model
TA-33**

\$ 99.75



**Model
V-4-6**

\$ 27.95

Broad band trap vertical for 10 thru 40 meters. Low SWR on all bands. Requires little space. May be mounted on ground or rooftop. Automatic band-switching all bands. Base loading coil available for operation on 80 meters.

Wow! What a happy Christmas a new Mosley "Trap-Master" will make! Drop that hint *now*! Open the magazine to this Mosley ad and leave it where 'Santa' can see it!

Remind Santa that owning a Trap-Master is just like multiplying your power many times. Tell about all the really good DX you will work...on three bands!

While your at it, send for brochure TR-1 so you can show how well the Trap-Master is made and what a terrific value it is.

Don't forget! Tell Santa! — and from MOSLEY, a very

Merry Christmas
WØFQY-KØAXS
WØRXX WØPXE
WØIFL WØCWV

Mosley Electronics, Inc.

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Export Dept., 15 Moore St.
New York 4, New York

For further information, check number 28 on page 124.

December, 1957 • CQ • 87

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All crystals made from Grade "A" imported quartz — ground and etched to exact frequencies. Unconditionally guaranteed! Supplied in:

FT-243 holders
pin spacing 1/2"
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pin spacing 3/4"
pin diameter .156

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pin spacing 3/4"
pin diameter .125

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pin spacing 3/4"
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1001 KC to 2500 KC:	
.01% Tolerance	\$1.75
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Specify holder wanted.	

ANY AMATEUR BAND CRYSTAL

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NOVICE BAND CRYSTALS

80 meters 3701-3749 KC

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15 meters 7034-7082 KC

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6 METER TECHNICIAN BAND CRYSTALS

SEALED OVERTONE CRYSTALS supplied in metal HC/6U holders—pin spacing .486, diameter .050.

10 to 30 MC .005 tolerance	\$3.85 ea.
30 to 54 MC .005 tolerance	\$4.10 ea.
55 to 75 MC .005 tolerance	\$4.25 ea.
75 to 90 MC .005 tolerance	\$5.50 ea.

STOCK OVERTONE CRYSTALS in FT-243 holders \$1.00

Frequencies listed in megacycles:

15.01	16.7	17.15	18.225
15.11	16.8	17.16	18.325
16.335	16.9	18.025	18.475
16.435	17.0	18.125	18.925

MARINE FREQUENCY CRYSTALS • All marine frequencies from 2000-3200 KC .005 tolerance \$2.50 (Supplied in either FT-243, MC-7, or FT-171 holders.)

RADIO CONTROL CRYSTALS • 27.255 MC sealed crystals. \$2.50 ea.

Stock crystals in FT-243 holders from 5675 KC to 8650 KC in 25 KC steps **50¢**

FT-241 lattice crystals in all frequencies from 370 KC to 540 KC **50¢**

Matched pairs ± 25 cycles \$2.50 per pair.

200 KC Crystals, \$2.00; 455 KC Crystals, \$1.00; 500 KC Crystals, \$1.00; 1000 KC Frequency Standard Crystals, \$3.50; Dual Socket for FT-243 Crystals, 15¢; Ceramic socket HC/6U Crystals, 15¢.

ASK YOUR LOCAL PARTS DISTRIBUTOR FOR TEXAS CRYSTALS... LOOK FOR THE YELLOW AND RED DISPLAY BOARD.

(Add 5¢ per crystal for postage and handling)

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Texas Crystals

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Terms: All items subject to prior sale and change of price without notice. All crystal orders MUST be accompanied by check, cash or M.O. WITH PAYMENT IN FULL. No C.O.D.s. Postpaid shipments made in U.S. and possessions only. Add 5¢ per crystal for postage and handling charge.

For further information, check number 67 on page 124.

Mac, WØATM, informs us of the incorporation in the State of Missouri of the Midwest Amateur Radio Teletypers Society as of March 1957. Mac is President, and WØIQC is Secretary. There are ten charter members and since incorporation their membership has grown to over twenty dues-paying members. A 2 meter net on 146.0 mc officially meets at 1400 on Sundays and at 2000 on Wednesdays. The QTH of the MARTS is 1404 So. Spring Street, Independence, Missouri.

Keith Petersen, W8SDZ of Swanton, Ohio in the Toledo area with their RTTY problems. works for WU and offers to help out anyone Keith says that a bias and distortion meter is mighty handy for checking signals from keyboards and TD's.

(Yes, indeed. See Comments at the end of this column.)

Comments

Bias and distortion measurements can give the RTTYer a good overall picture of the performance of his converter as well as of his machines. Heretofore such measurements have entailed the use of cumbersome complicated dot-generators and test sets. W6CQK recently made a simple bias test set from the surplus I-97 "Bias Meter." The description of Jack's modification will soon appear in RTTY, the bulletin of the RTTY Society of Southern California. Watch for it.

As a companion unit, W2JAV is now developing (RTTYers build) a transistorized dot-generator. The experimental "bread-board" unit I saw during a recent visit to southern New Jersey was about the size of a pack of cigarettes, small enough to fit in the empty space in the bias test set of W6CQK! (Don't write Phil—it will appear in print as soon as possible!)

73, Byron, W2JTP

VHF Interference

[from page 47]

lators, we found an interesting phenomenon. 1/8 turn we can obtain the desired ratio by taking 4/10 of a turn from the top of the coil (assuming a total of 7 turns) and restoring the circuit resonance with the slug or by adding a small condenser across the coil.

In experimenting with overtone crystal oscillators, we found an interesting phenomenon. One would gather from the literature that many AT or BT-cut crystals will oscillate at their 3d overtone and a few at higher overtones and those oscillating at a high overtone would oscillate even better at a lower overtone. We were surprised to find that some crystals would display 7th overtone activity but none at the 5th, some at the 5th and not the third, etc. Prior to this discovery we checked crystals first for 3d overtone activity and discarded those displaying no activity at that overtone. A recheck on some of these found some that were

[Continued on page 98]



THE NATIONAL NC-109

A modern, low-cost receiver with an exclusive "Microtome" crystal filter and separate product detector for CW and SSB reception. Includes large "S" meter, 4-band coverage (540 kc. - 40 mc.), voice, CW or SSB reception. Bandspeed calibrated for 10-80M. 11" lucite slide-rule dial, accessory socket for external adapters and other accessory devices. 11 tubes including rectifier and voltage regulator. Two tone metal cabinet with chrome trim measures 16-13/16 x 10 x 10-7/8". Weight: 35 lbs.

Only \$16²⁰ per mo.

\$199.95 Amateur Net
\$20.00 Down

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NATIONAL RECEIVERS

Are in Stock at

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WORLD RADIO
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THE NATIONAL NC-188

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\$12⁹⁶ per mo.

A top-quality, low-cost receiver, directly calibrated for the 4 general coverage ranges and 5 bandspeed ranges for the amateur bands (80-10M). Also covers 540 kc. to 40 mc.; voice or CW. Features include calibrated bandspeed for 10, 11, 15, 20, 40 and 80M; separate tuning capacitors, knobs and scales for general coverage and bandspeed; large easy-to-read 11" slide-rule dial, and front panel "S" meter for signal strength indication and more accurate tuning. Size: 16-13/16 x 10 x 10-7/8".

\$159.95 Amateur Net
\$16.00 Down

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Globe Transmitters

Globe Chief 90—\$ 67.50; \$ 5.47 per mo.; Kit: \$54.95

Globe Scout 680—\$109.95; \$ 8.91 per mo.; Scout 66:
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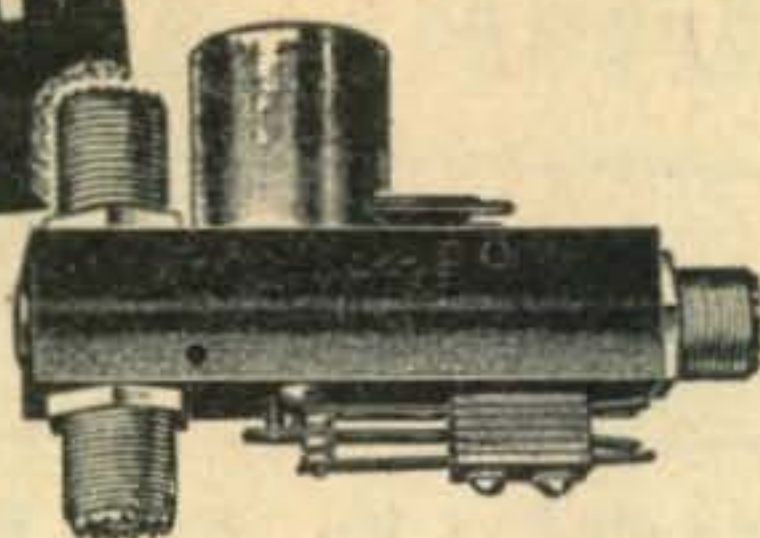
CITY & STATE _____

For further information, check number 30 on page 124.

December, 1957 • CQ • 89

SILENT Coaxial Relay

MODEL
DKC-GE



TESTED AND PROVEN BY AMATEURS AND INDUSTRIALS

New magnet principle makes high-contact pressures possible — gives a new concept of low-contact resistance. Free of AC hum or chatter, available with special receiver protecting connector and heavy-duty external SPDT switch.

One-million operations completed in life test with no apparent deterioration. Power consumption, AC models approx. four watts; DC models three watts. V.S.W.R. at 150 mc 1.1 and 1.2 at 300 mc. Coil voltages: AC 6, 12, 24, 110 and 220; DC 6, 12, 24, 48, 110 and 220. Special coil voltages available. **GUARANTEED!** Fully backed by factory warranty for unit replacement.

DOUBLE MALE-CONNECTOR (DKF2) for mounting relay directly onto output of transmitter. See your local electronic parts dealer or write direct for complete specifications.



Price \$10.90 to \$15.65

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For further information, check number 31 on page 124.

For A Complete Line of Ham Equipment

"Wonder Bar" 10 Meter Antenna

As featured in Nov. 1956 QST. Complete with B&W 3013 Miniductor. Only 8 feet long for 10 meters. Net.....\$6.95



6 Volt Dynamotor



Rated output: 425 V. DC at 375 ma. High efficiency, compact. 4" diameter, 7 1/2" long. Shpg. wt. 13 lbs. Worth 2 to 3 times this low price..... \$12.95

3 Conductor Coil Cord



21" extended to 6' with tinned lugs. Change straight cords on mobile mikes and handsets at a low price. Reg. \$3.75.

Special Price..... \$1.25

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For further information, check number 33 on page 124.

90 • CQ • December, 1957

Propagation [from page 51]

ALL TIMES IN PST

Western USA To:	*6/10 Meters	15 Meters	20 Meters	40/80 Meters
Europe and North Africa	8A-12N (1)* 7A-9A (2) 9A-12N (3)	1A-3A (1) 6A-8A (2) 8A-11A(3) 11A-2P(2)	1A-4A (2) 4A-10A (1) 10A-4P (3) 4P-8P (2)	5P-2A (2) 8P-1A (1)**
Central and South Africa	7A-3P (1)* 6A-11A (2) 11A-4P (4) 4P-6P (2)	6A-11A(2) 11A-5P(4) 5P-9P (2)	10A-1P (1) 1P-3P (2) 3P-9P (3) 9P-12M (1)	5P-10P (1)
South America	8A-10A (1)* 5P-8P (1)* 6A-12N (3) 12N-3P (4) 3P-6P (3)	5A-8A (3) 8A-12N(2) 12N-6P(4) 6P-8P (3) 8P-10P(1)	1P-3P (2) 3P-10P (4) 10P-2A (3) 2A-8A (2)	6P-8P (2) 8P-3A (3) 8P-2A (2)**
Guam and Pacific Islands	12N-3P (1)* 11A-1P (2) 1P-6P (4) 6P-8P (2)	10A-3P(3) 3P-10P(2) 10P-1A (1)	8P-12M (3) 12M-6A (2) 6A-9A (3) 9A-12N (1)	2A-7A (3) 4A-6A (2)**
Australasia	4P-7P (1)* 8A-4P (3) 4P-8P (4) 8P-10P (2)	7A-11A(3) 11A-6P(1) 6P-8P (2) 8P-11P(4) 11P-2A(2)	6A-10A (3) 10A-12N(1) 7P-9P (1) 9P-1A (4) 1A-6A (2)	12M-7A (3) 1A-7A (2)
Japan, Okinawa and Far East	2P-6P (1)* 1P-3P (3) 3P-5P (4) 5P-8P (3)	12N-4P(3) 4P-7P (4) 7P-10P(3)	5P-8P (2) 8P-12M (4) 12M-4A (3) 4A-10A (2)	12M-8A (3) 1A-6A (2)**
Philippine Is. and East Indies	3P-6P (1)* 9A-11A (2) 11A-1P (1) 1P-6P (3) 6P-8P (2)	9A-11A(3) 11A-2P(2) 2P-8P (1) 8P-10P(2)	4A-10A (2) 10A-12N(1)	2A-8A (1)
Malaya and South East Asia	4P-6P (1)* 9A-11A (3) 3P-8P (1)	9A-12N(3) 12N-2P(1) 2P-7P (3) 7P-10P(2)	12M-4A (1) 4A-8A (3) 8A-12N (2)	5A-9A (1)
Hong Kong, Macao and Formosa	4P-6P (1)* 2P-8P (3)	1P-6P (2) 6P-9P (3)	1P-6P (1) 6P-10P (3) 10P-6A (2)	12M-6A (2) 1A-5A (1)
Siberia	3P-6P (1)* 2P-4P (2) 4P-6P (4) 6P-8P (2)	1P-5P (2) 5P-7P (4) 7P-10P(2)	5P-7P (2) 7P-9P (4) 9P-12M (3) 12M-8A (2)	10P-6A (3) 12M-5A (2)**
India and Central Asia	4P-7P (2)	3P-8P (3)	3P-8P (3) 8P-12M (2)	2A-7A (2) 3A-6A (1)**

SYMBOLS FOR NUMBER OF DAYS CIRCUIT PREDICTED TO OPEN:

(1) 1 - 4 days (2) 5-11 days (3) 12-18 days (4) 19-26 days (5) over 26 days

* Indicates time of possible six-meter openings.

** Indicates time of possible eighty-meter openings.

The CQ Propagation Charts are based upon a CW radiated power of 150 watts and are centered on Washington, D. C., St. Louis, Mo., and Sacramento, California. These forecasts are calculated from basic ionospheric data published by the CRPL of the National Bureau of Standards and are valid through January 15, 1958.

curve of the satellite signals does indicate that the signal changed in character from a hollow signal to a pure DC signal when it came into and left the line of sight range.

"We observed the Beep frequency increase from about 130 per minute to about 186 per minute before the beeper stuck.

"It was a good show, and demonstrated many principles of radio propagation while my ear was glued to the satellites frequency for three days."

Next Month

Next month we'll review the history making propagation events of 1957, and have a forecast for 1958.

Merry Christmas and best wishes for 1958

73, George, W3ASK

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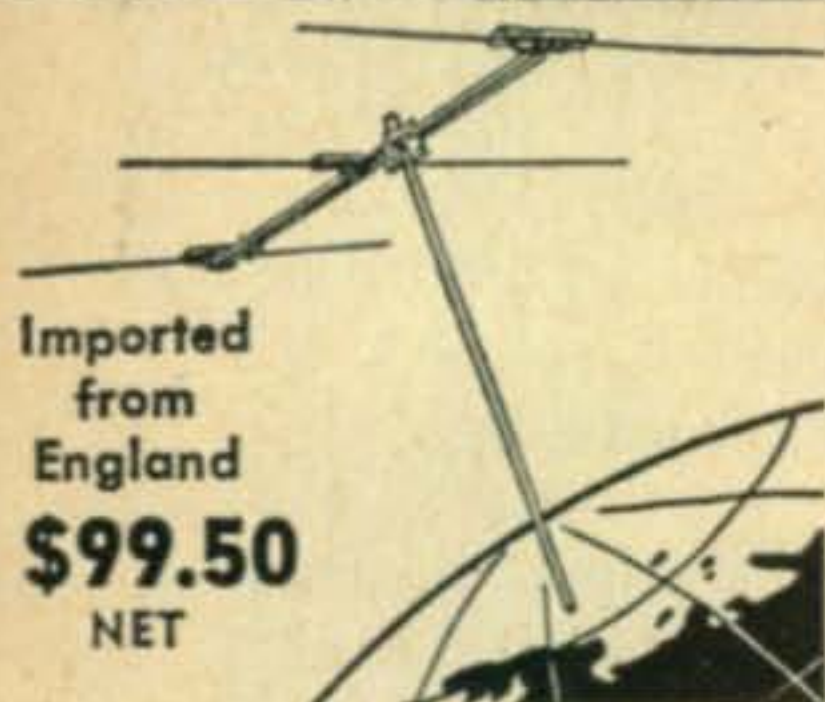
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For further information, check number 32 on page 124.



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For further information, check number 36 on page 124.

NOVICE [from page 71]

to a 40 meter dipole. The receiver is a badly beat up SW-54. I took the Conditional exam 10 weeks ago and am still awaiting the gud news (I hope). I would like to try 40 and 15 phone and 20 cw. How about a modulator for the Knight xmitter? I might try to convert the Knight for six if I can raise some money for a converter. I would like to hear from anyone needing Indiana for WAS. Also I will help anyone on their ticket. The phone is HA-46520. 73 es gud DX Mike.

John, K5BXM, forgot to include his QTH.

Dear Don: I am on six here with 10 states confirmed and I don't really work at it. I'm a junior EE major at Texas A & M. Keep up the articles 73 John.

New Mexico is represented by Donald M. Barnett, 1724 Foster Rd., Las Cruces, New Mexico. He writes:

Dear Don, I'm on the air on 40 meters every night and will be happy to sked anyone needing a N.M. contact. The rig here is a DX-35 and a Hammarlund Super Pro does the receiving. So 73's for now and keep up the nice work. Adios, Don.

Well, Fellows, that's 30 for this month. How about some pictures for the Novice Column. As you can see, we're pretty thin this month. They do not have to be 8 by 10 glossy, but simply clear snapshots. I am particularly interested in photos of stations that are on the DX lists. 73 Don, W6TNS.

Puzzler Answers, see page 20 for problems.

#2 November: 99) 19107 (193
99
920
891
297
297

#1 This month. 1475 x 677 and you can figure it out from there.

#2: Let h be height, and a be diam. Let θ be angle of stick with floor. Then $AB = h/\sin\theta \div a/\cos\theta$. Place derivative equal to 0, $\tan\theta$ equals $(h/a)^{1/3}$, length of stick equals $(h^{2/3} \text{ plus } a^{2/3})^{3/2}$ equals 16.6 feet. Whew!

#3. Alice is 8, Betty 5 and Christine 3. ■

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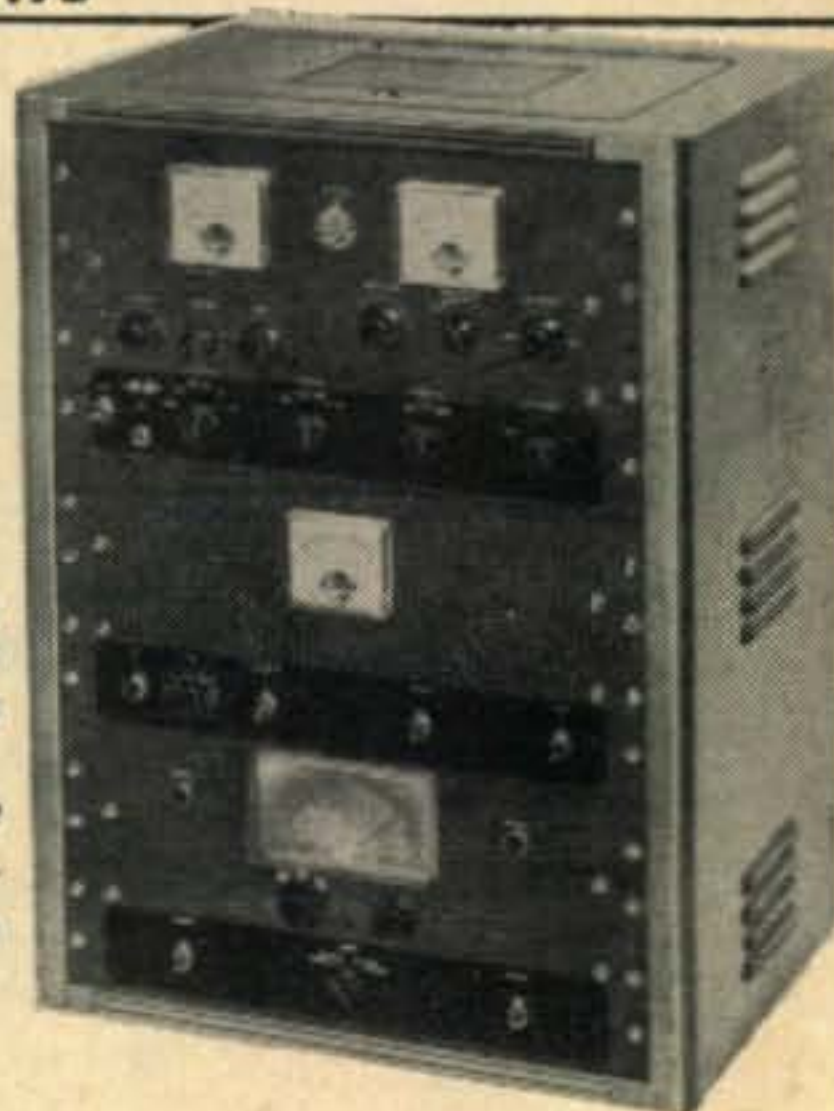
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December, 1957 • CQ • 93

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YL [from page 77]



W6QGX, Harryette Barker

other hobbies, etc. Copies are \$1.00 each; send your money and request to YLRL treasurer Harryette Barker, W6QGX, 16011 E. Fairgrove Ave., Puente, Calif.

President W7NJS, Beth Taylor, of Manzanita, Ore., licensed in 1949, holds Advanced Class ticket. A graduate of Ore. Normal School and U. of Ore., she holds M.A. and has taught 12 years in schools for the blind, 5 in public schools. Since an illness at age 14 Beth has had partial vision. A former YLRL D/C, she is a member of Ore. Emergency Net, Tillamook Radio Communications Club, Asst. R.O. of Tillamook County, OPS, Master BRAT, and has RCC. OM Bill, a plumber, is W7PPG.

Vice president W4BLR, Kay Anderson, of Richmond, Va., an A-1 op, was licensed in 1953. A former YLRL D-C, she holds CP-30, YLCC-150 and was high cw score in '56 YL-OM contest. Formerly a dispatcher at County Police Station, she now is busy as a block warden for CD, with Cub Scouts, piano lessons and studying business administration along with her OM, W4BVB, who is in communications for R.R. They have four jr. ops, 8, 7, 6 and 2.

Secretary WØTYB, Betty Rogers, of Denver, Colo., licensed in 1954, is active on all bands phone and cw, using a Globe King 500 B and an NC-300. OM WØGQY, a distributor of Ham gear, is setting up new antennas with a 40-meter beam about 55 feet high and a Tribander below it. Betty enjoys mobiling, CD work, YL nets and contests. Other hobbies include painting, flower arranging and listening to Spanish broadcasts.

Treasurer W6QGX, Harryette Barker, of Puente, Calif., a pre-war licensee (1940) holds an Advanced Class ticket and was formerly W9KSA and W8JLL. Her kw. serves her well as NCS of 40-meter YL Round-table, 2-meter American Legion Net and for traffic on 75. She has placed high in A.P. and YL-OM contests, holds YLCC and nearly has 48 states YL. OM W6GQP is a radio engineer in aircraft; their daughters are Susan 9, Linda 8 and Nancy 6. Other hobbies are playing the organ, painting and gardening.

"Isle Royale Calling"

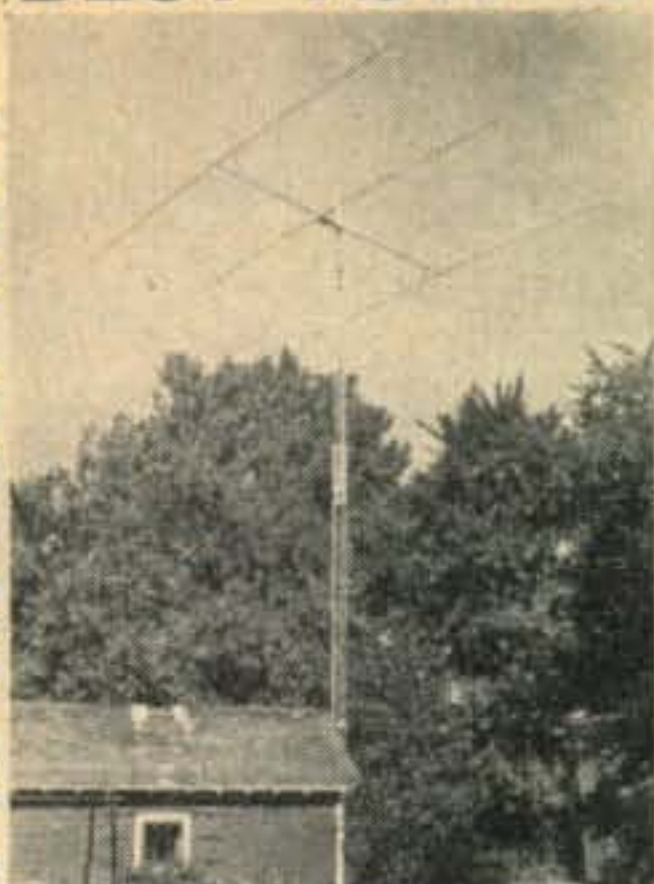
The latest novel by W8GJX, Helen Cloutier,
[Continued on page 109]

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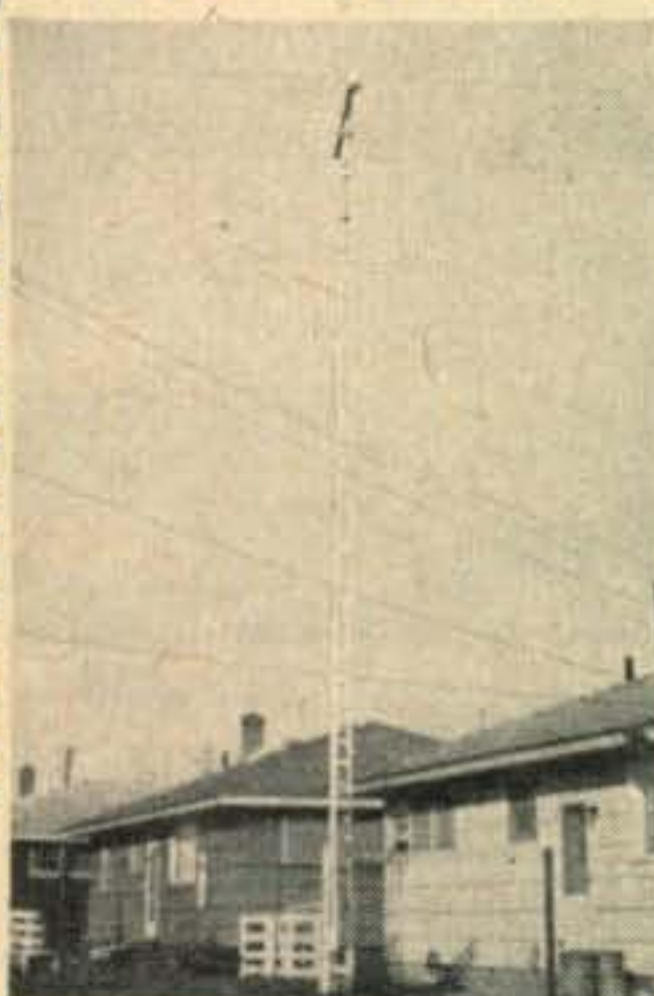
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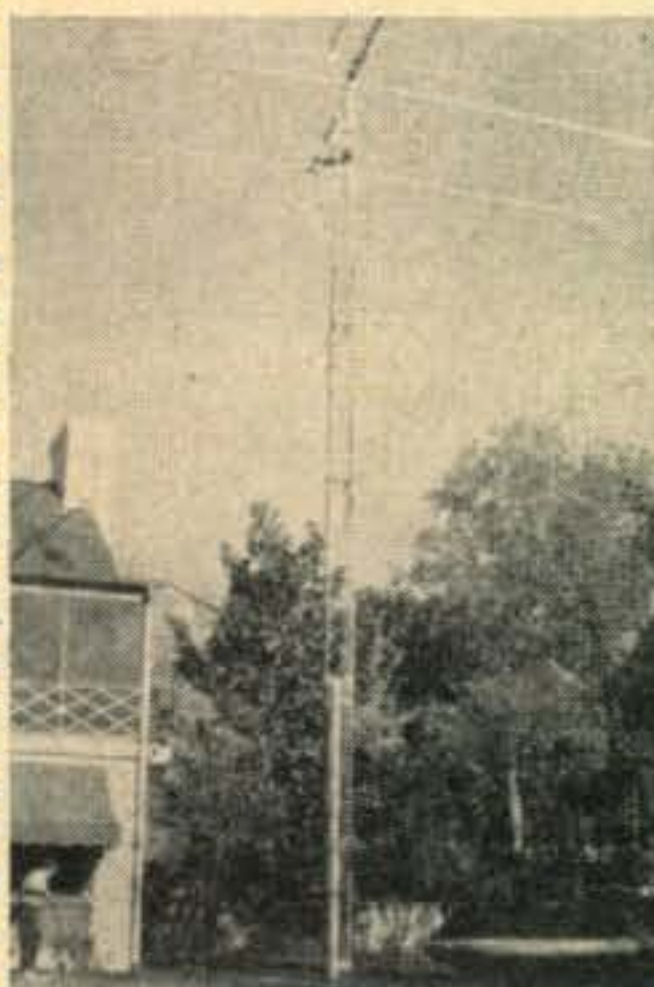
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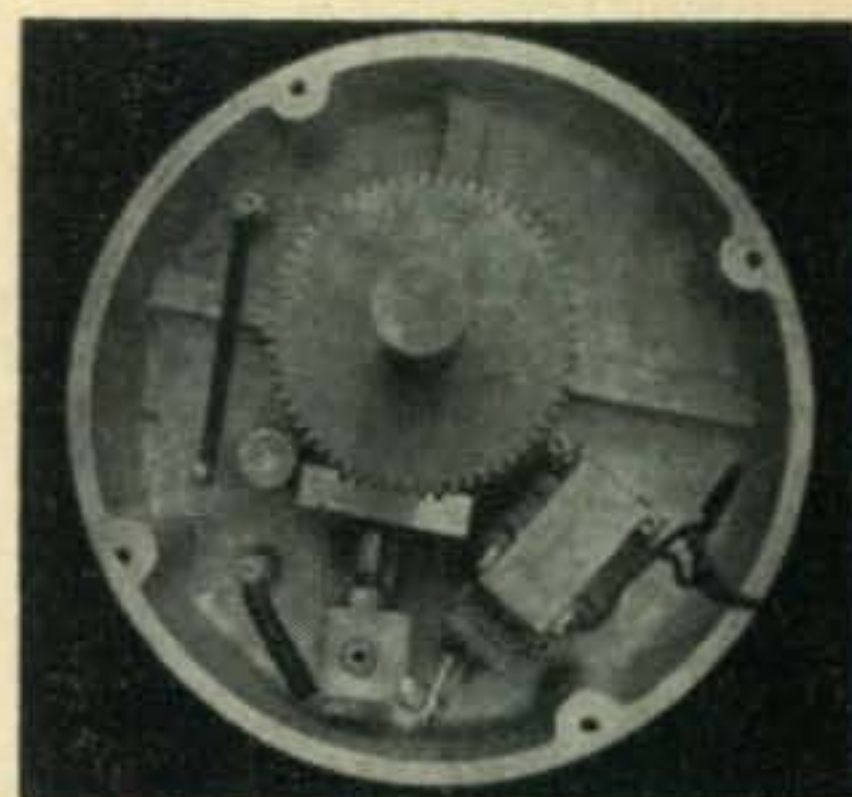


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... Wayne



CHRISTMAS GIFTS

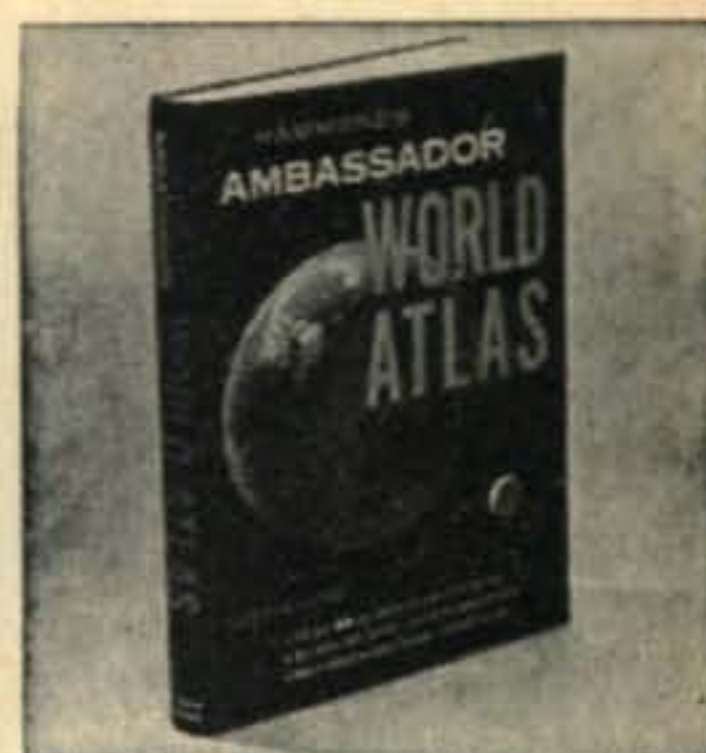


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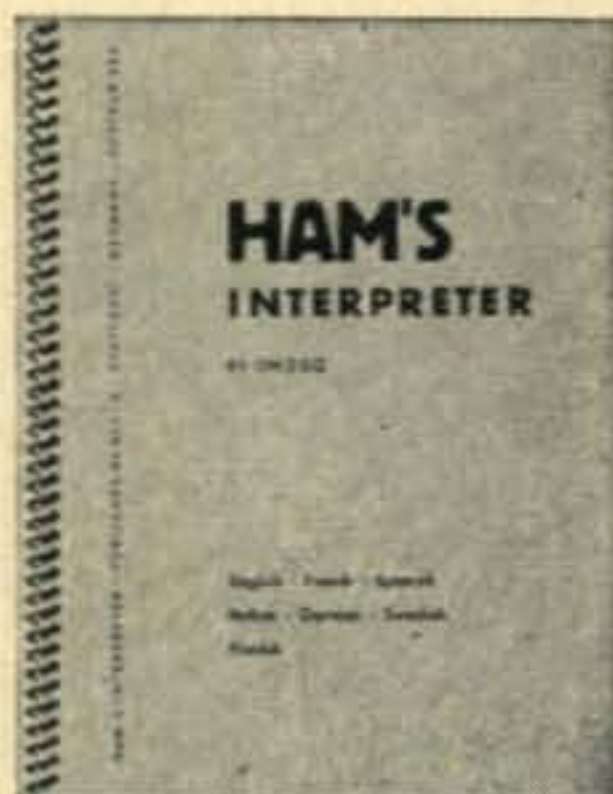
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For further information, check number 40 on page 124.

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POPULAR SENCORE PRODUCTS

- Transistor
Tester
- Leakage
Checker
- Filament
Tester
- Handy "36"
- Vibra-Dapter

VHF Interference [from page 88]

active on the 5th and even 7th overtone. The ability to oscillate at an overtone can be quickly found by connecting the crystal holder socket across a coil of a few turns and coupling the coil to your grid dip oscillator coil. If the meter shows a dip at the overtone frequency, it will oscillate at that frequency. The dip is very sharp and the grid-dipper may have to be tuned very slowly through the overtone frequency several times before it is found. The degree of activity is proportional to the amount of the dip so that the output and ease of oscillation can be determined from the meter swing. It is obvious from the tables that the higher the fundamental and overtone the less the number of birdies obtained in the i.f. band. You can't beat the 130 mc overtone crystal however, and the difference in price between this jewel and a third overtone crystal offsets the price of the tube or tubes and tanks that are required with the latter, to say nothing of the extra work. ■

Cheapest Way Out [from page 39]

years had he not been injured. 50 years at \$5000 per year—\$250,000. 25% for permanent disability—\$62,500. We have said nothing yet about doctor and hospital bills—pain and suffering on the part of the injured party. Far-fetched?—don't be too sure. You can bet your last pair of flat 807's that if it were my youngster, I would be right in there for everything I could get for him—so would you! (That lawyer cannot help you with the \$62,500, but a good liability insurance policy could have.)

Just because you have been sued does not mean that you are liable. But when you receive that complaint we talked about, you must answer it or lose the suit by default. The real problem created here is one of providing defense and the cost of court proceedings. Not many of us have an attorney on a retainer basis. Like so many others, we have to start looking around for one when the chips are down. We must pay a retainer fee, filing fees, investigation fees, court costs, etc., all just to defend ourselves—to say nothing of the fact that we might be found legally liable and have to pay the judgment too. And, generally, that judgment is good until it is paid off.

Is it not just good plain common sense to buy the insurance to retain the attorney, to file the answer, to be in court with and for you, to pay the costs and to satisfy the judgment in the event you are "it". Are you going to gamble your future paychecks or buy a liability policy? Insurance is infinitely the cheapest way out.

You should remember that when you buy insurance protection it is for just the words we have used—"legal liability". It is the result of "due process of law." You might feel morally responsible, but that is not necessarily Legal liability. Further never construe that a liability contract protects anyone else but the person in

For further information, check number 42 on page 124.

GIFTS FOR "LOCAL" QRM! KITS FOR THE OM!

HANDEL'S Messiah

Reg. \$11.94 **Complete 3-Record**



\$6.99

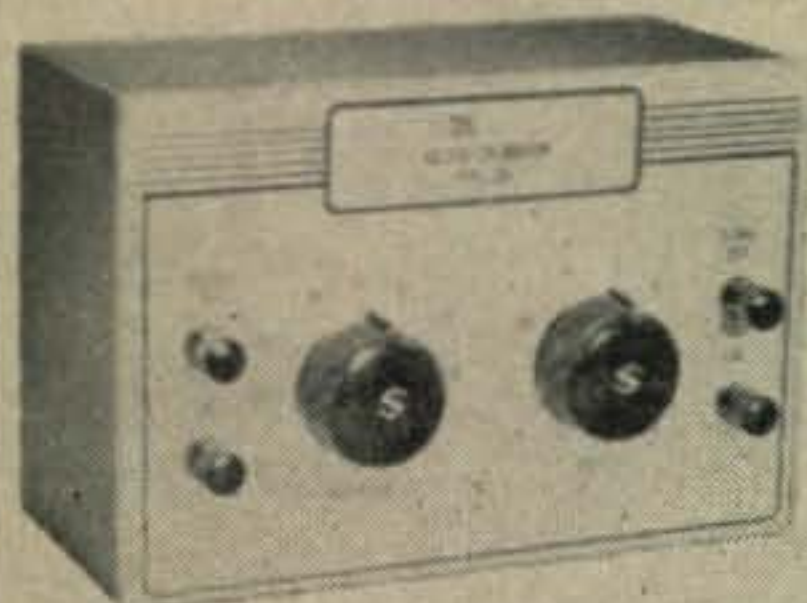
COMPLETE highest-fidelity recording of Handel's beloved MESSIAH, on THREE 12" LP UNICORN RECORDS. Handel and Haydn Society, conductor Thompson Stone with the Zimble Sinfonietta of the Boston Symphony Orchestra. Soloists: Adele Addison, Lorna Sydney, David Lloyd, Donald Gramm. Recording engineered by the great Peter Bartok! None matches the orchestral grace and fervor!

Order No. UNS-1C Ship. wt. 3 1/4 lbs.\$6.99

VOLTAGE CALIBRATOR KIT

Original wired price \$34.50

\$7.95



- Clipped Sine Wave Output
- No Tilt or Overshoot
- Step & Smooth Attenuated Output

Voltage Control calibrated in peak-to-peak volts from 0 to 10. 5 step attenuator-multiplier calibrated .001, .01, .1, 1 and 10. 100K output imp. 5% accuracy. Uses 6AL5 and VR105. 117 VAC. 8 1/2" x 5 3/4". Complete with all parts, tubes and instructions.

Order No. C R-304K Ship. wt. 7 lbs.\$7.95

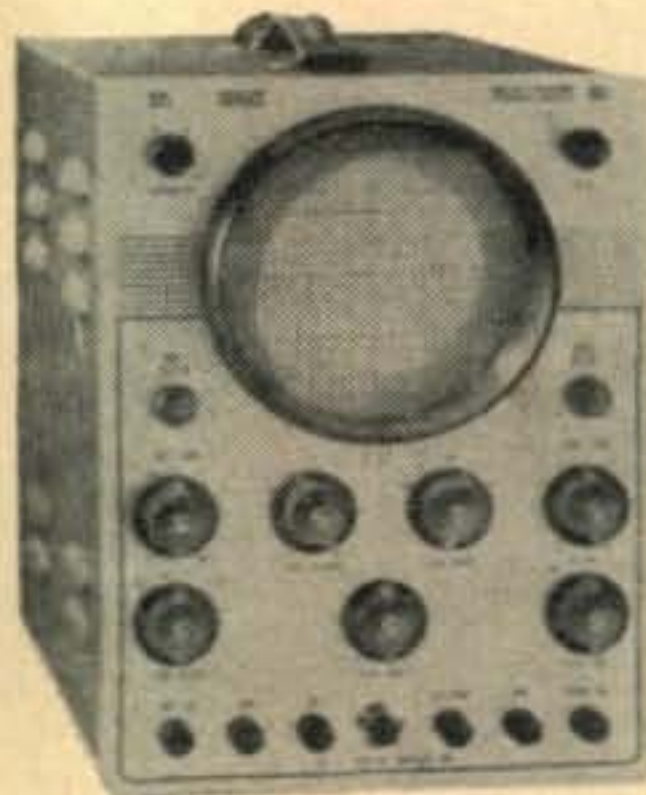
5" LAB SERVICE SCOPE KIT

Original
Wired
\$129.50

\$39.95

A GREAT ADDITION TO ANY SHACK! Exclusive low cost 5" TV Lab Oscilloscope Kit provides extreme sensitivity and accurate display of response curves and complex wave forms. Identical Vertical and Horizontal amplifiers mean identical sensitivity—.03 db from 2 cycles to 700 kc and an input impedance of 2.2 megs. shunted by 22 mmf. Linear sawtooth sweep from 16 cycles to 50 kc useable to 75 kc! Push-pull vertical and horizontal deflection. Uses 5 12AT7, 1V2, 6X4, and 5UP1 CRT. Dark Grey wrinkle finish cabinet measures 12 x 8 3/8 x 16 3/4" D. Complete with all parts, tubes.

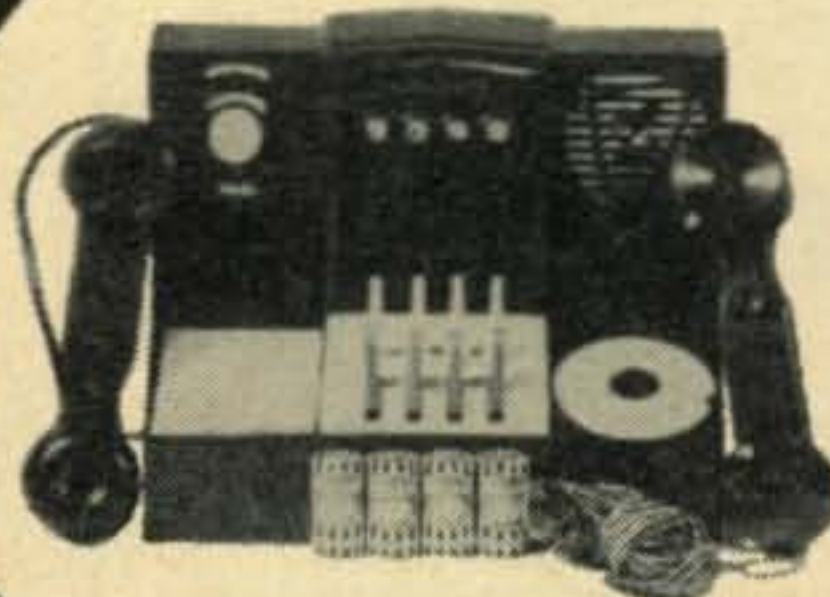
Order No. C R-405K Ship. wt. 4 lbs.\$39.95



Electronic 2-Fone SWITCHBOARD

\$2.99

Was \$9.95



WORK! Ideal gift for the small "local QRM" around the shack! Will keep the JO occupied for hours, operating the giant switchboard replete with plugs, jacks, buzzers, wires, selectors, signal flags. Full intercom functions. Order NOW!

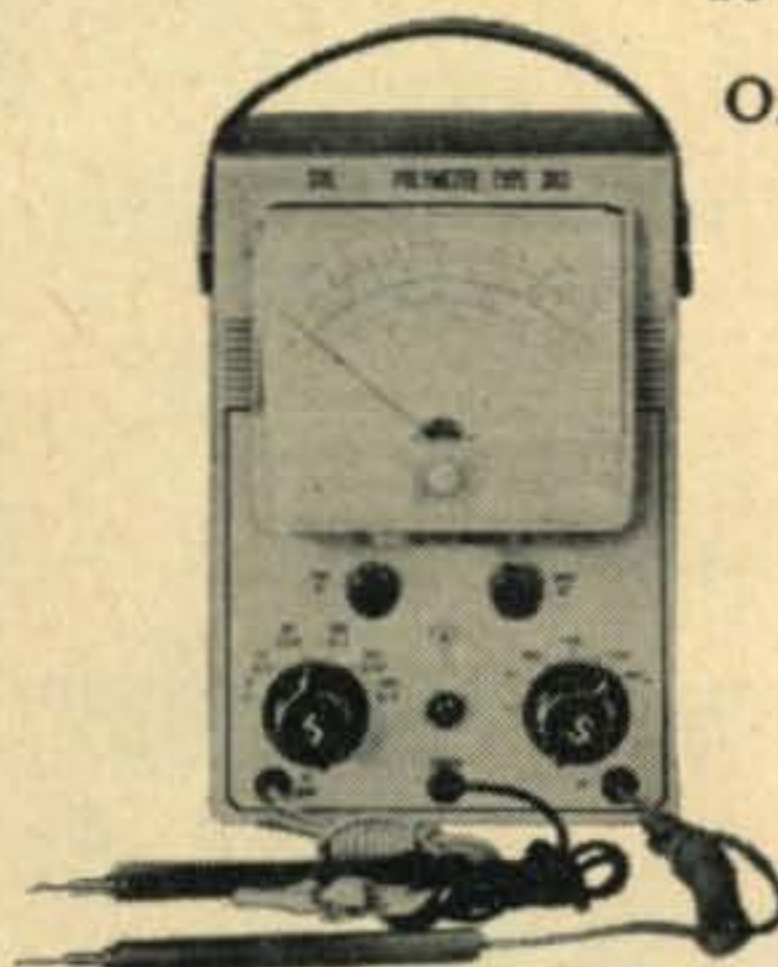
Order No. C R-9226 Ship. wt. 4 lbs. Sale! \$2.99

4" LAB VTVM POLYMER KIT

- 6 DC Ranges
- 6 Resistance Ranges
- 10 Megohm Input

Original Wired \$54.50

\$21.95



A SENSATIONAL BUY! Invaluable to any ham who likes to build his own gear! Lab quality VTVM Kit at a Service Instrument Price! Full 4" meter; AC and DC volt ranges: 0-3; 0-10; 0-30; 0-100; 0-300; 0-1000. Resistance ranges: 0-1000 ohms; 0-10K; 0-1 Meg; 0-10 Meg; 0-1000 Meg. Has permanently attached

leads and the quality and ease of operation that only experience knows how to build. Handsome dark grey wrinkle-finish cabinet; 5 3/4 x 8 1/2 x 4" D. Complete with all parts, tubes, instructions.

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For further information, check number 41 on page 124.

December, 1957 • CQ • 99

Before you buy ANY HAM EQUIPMENT GET Henry's DEAL



HQ110 • 20 monthly payment \$11.30.
\$22.90 down. CASH PRICE \$229.00.
Designed all the way with the amateur
in mind. Smart, modern receiver packed
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Clock timer \$10.00 extra.

HENRY HAS THESE HAMMARLUND ITEMS IN STOCK FOR IMMEDIATE SHIPMENT

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Catalog

whose name it is written. So many times we have the question asked, "When I am on your property does your insurance policy cover me?" NO! It protects me, the named insured against bodily injury or property damage you might suffer while on my property due to my negligence. You might benefit as a result of my insurance, but I am the one insured and I am the one "covered".

Many people feel that it takes a "Philadelphia Lawyer" to read an insurance policy and understand it. Nonsense. Any group, such as amateur radio operators, who can sit down and design, understand, build, convert, operate or modify the complicated intricacies of an electronic circuit, can certainly understand an insurance policy if they will sit down and read it!

I would venture a guess that 95% of the insuring public do not read their insurance policies—until they have a loss. Agents and claims men are continually plagued with the phrase "I thought that was covered when I bought the policy." If people have some specific purpose in mind when they buy an insurance policy you would think that they would at least unfold it to see if they got what they paid for. But most of them don't even take it out of the envelope it was mailed in. Then when some loss occurs that is not covered—"the agent is no good and the company he represents should be put out of business." They will never spend the time to go over their entire situation with their insurance agent. Try it some time. You might be amazed at the things he carries in his little bag of tricks he calls a rate book.

These same people will think little of paying ten-twelve-fifteen dollars to replace the tube in the final that went gassy. But they will hem and haw, wiggle and squirm, wrangle, get standoffish, mad and downright belligerent when the insurance agent recommends liability protection to them for ten bucks a year. They say that they need it like a "hole in the head" when all the time the agent is talking about a hole in the family pocketbook. Always remember: an insurance policy provides dollars—nice, sweet, lovely, green, crisp dollars—and when you really need them.

Now if you haven't called your insurance agent yet, either to get coverage or to find out if your policy covers what you think it does—*call him now!* Then call the secretary of your ham club and find out about your club's coverage too. If the club has no protection—you make a motion at the next meeting. If your agent knows you are a ham and hasn't strongly recommended liability protection for you—I suggest you get a new agent. Legally he is not responsible to suggest it, but he'd darned-well better if he is doing a proper job for you, your interests and your family's budget.

Can your family's pocketbook stand the cost of a lawsuit—or the cost of a liability policy. Proper insurance is infinitely the cheapest way out.

For further information, check number 43 on page 124.

Let me put **YOU** in this *Collins* Picture!

"In the many hours my Collins 75A-4 and KWS-1 have been on the air in the last two years, they have always exceeded my expectations. They truly represent amateur communication equipment at its finest."

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Collins KWS-1 SSB Transmitter,
Net Price \$2,095.00
Collins 75A-4 SSB Receiver,
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Top trades . . . 90 days open account or only 10% down—up to 20 months . . . Personal Service . . . Fast Delivery. Henry has ALL the New Equipment.

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We are proud to have helped hundreds of fellow amateurs enjoy the thrill of operating these superb Collins transmitters and receivers. Our liberal trade policy and easy terms puts them within YOUR reach.



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GRanite 7-6701

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"World's Largest Distributors of Short Wave Receivers."

For further information, check number 44 on page 124.

...de W2NSD (bonus)

Radio's Inventor

Just as a matter of interest, I wonder how many of you know the name of the man who described and demonstrated radio transmission and reception three years before Marconi, invented the loudspeaker, the detector tube, the tuned circuit, our complete present day system of alternating current, including generators, motors, and transformers; neon lamps, phosphorescent lamps, the electric clock, X-rays, cosmic rays, three phase power transmission, radioactivity, diathermy, the electron microscope, black light and our present system of broadcasting news and music. This is the chap who selected 60 cycles for our power frequency. Certainly you must know who this fellow was? Think I'm kidding? He lived . . . he did all those things . . . and he died in 1943. Now, who was he?

ARE YOU MOVING?

If you expect to move, and IF you know your new address now, and IF you don't want to miss any issue of CQ here are three things you can do right now!

1. Tear your name and address label off the wrapper of this issue and paste it in this box right over these words, or make a complete and accurate copy of your old address label.
2. Print your name and NEW post office address in the lines below:

(Name)

(Number and street—or Route)

(City)

(Zone)

(State)

3. Cut out this whole box and mail it to: CQ Magazine, 300 W. 43 St., New York 36, N. Y.

W2NSD Visits

A note from Bill Leonard, W2SKE, mentioned that he was going to be operating during the CQ World Wide DX Contest from K2GL on a multi-operator setup. So I popped up there during what should have been a quiet spot in the contest and, after threading my way between the huge rotating towers, I found K2GL was perking away with three positions going simultaneously. Gad, what a layout 75A4's, KW-1, KWS-1, and a Johnson Kilowatt plus scads of other goodies. They were within shooting distance of getting a million points and were breathing hard on ten and eleven meters for more countries and zones. Conditions were, for a change, excellent over the entire weekend and the only limiting factor was the QRM (on *other* stations, not K2GL) and the sheer weight of numbers participating.

Clipping Service

A note from W6BIL warns that unsolicited notices from clipping services may herald your being clipped more than the newspaper or magazine that they infer. Don't forget that your QTH in the Callbook might be palmed off as a reference to you in a national publication. Your biography in the Ham Register might be sold to you as an article about a recent event in your life, etc. Don't add another chapter to Gullible's Travels.

Good Grief

The dimensions of the ZL antenna, page 20, November CQ were lost somewhere. A—30' 10"; B—31' 6"; C—7' 1"; D—9"; E—4"; F—7' 9" of 300 ohm twin-lead. Suggested height above ground: 32'. ■

1000 WATTS AVERAGE INPUT

New Grounded Grid linear RF amplifier, SDP 1000L, 1000 watts average input, 2000 watt peak envelope power (P.E.P.) for voice, is the package with a punch! Used by Air Force MARS, YOU can now own this rugged, reliable RF amplifier.

OUTSTANDING FEATURES

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- ★ Overall Dimensions: 10½" High, 17" Wide, 14" Deep

Price...\$690.00 Write for further information

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POWER RATING

MODE	DRIVE	INPUT	OUTPUT
CW • Key down conditions	30 to 40 watts	1000 watts	575 watts
SSB • Average meter reading on voice peaks • Peak envelope power (P.E.P.)	40 to 50 watts	1000 watts	625 watts
Two-tone test	65 to 80 watts	1600 watts	1000 watts
Voice	80 to 100 watts	2000 watts	1250 watts
AM • Carrier with DSB	15 to 25 watts	700 watts	300 watts

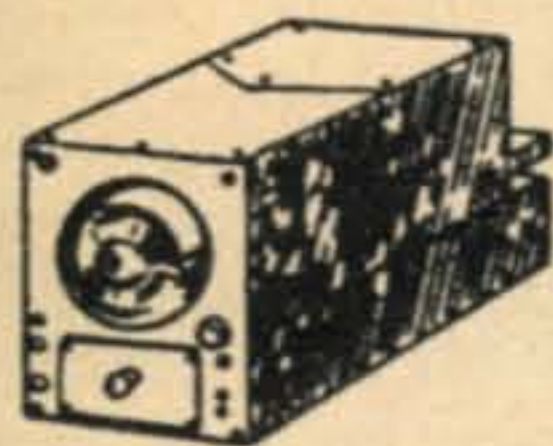


For further information, check number 45 on page 124.

SAVE!...BARGAINS GALORE!...SAVE!

NEW LOW PRICES!—EFFECTIVE DECEMBER 1st

COMMAND TRANSMITTERS & RECEIVERS



ARC-5 and SCR274 as
available
BC 455

XLNT \$5.95
Depot Repacks \$7.95

Receivers, w/o dynamotors

R-25 Marine, 1.5-3 MC, new	\$14.95
R-26 or BC-454, 3-6 MC, used \$6.95. Depot Repacks	7.95
R-27 or BC-455, 6-9.1 Mc, used \$5.95. Depot Repacks	7.95
R-28, 100-156 MC, Exit	13.95
R-4/ARR-2, 234-258 MC, as is w/o tubes, \$2.95,	
w/tubes, used	4.95
Receiver Spinner Knobs	ea. .69

Transmitters, w/o modulator or dynamotor

T-18 Marine, 2.1-3 Mc, as is, w/tubes, 3.95, used 4.95,	
boxed	7.95
T-19, 3-4 Mc, as is w/tubes, 6.95, used 7.95, new	8.95
T-20 or BC-457, 4-5.3 Mc, as is w/tubes, 2.95, used 3.95	
boxed	5.95
T-21 or BC-458, 5.3-7 Mc, as is, w/tubes, 2.95, used 3.95,	
boxed by depot	4.95
T-22 or BC-459, 7-9.1 Mc, as is, w/tubes, 3.95, used 5.95,	
boxed	8.95
T-23, 100-156 Mc, xmitter used, 13.95, xlnt	14.95
Special—I R-28 Rec. & I T-23 mitter both	25.95

Misc. Command Equipment as available

Receiver dynamotors 28V, used	\$ 1.00
BC-456 SC Mod. w/tubes, new 4.95, used	3.95
MD-7 ARC-5 PI Mod w/tubes less dyn. Xlnt	8.95
28 v dynamotors for above unit	3.00
3-Rec. Rack, new	2.49
C38 ARC-5 Control Box	Xlnt 1.49
C30 ARC-5 Control Box	New 4.50
Radio Compass Ind. I82A With Selsyn	New 8.95
12V Relay DPST	New 2.49
New 24V Trans. 1A	3.50
Plugs for rear of receiver	1.00

110 VAC power supply for ARC-5 &
274N Recvrs kit 8.95, Wired & tested 12.95

Receiver Conversion kit: cont. sche-
matic, BFO Sw, 25 K Pot. phone
jack and knob, with instructions 1.95

1625 Tubes, for trans $\pm$ mod. 50¢ 3/1.00

POWER DRIVEN ANTENNA REEL

$\frac{1}{2}$ HP G.E. Motor—12-24 V. Removable 6" Reel. Cam worm
gears, bevel gear, Solenoid clutch. In gear only when current
on. Operates clockwise or counter clockwise. Ideal for power fish
line, opening or closing doors, auxiliary power take-off. Can be
used as buffing machine or for dozen of other uses. **\$4.95**
Weight 6 Lbs. New

Popular Dynamotor Specials

DM-34 Recvr. Dyna. 12 V in 220 @ 80 ma out. new	4.95
DM-42, 12 V in. out 1000 and 500, ea at 215 Ma. used	12.95
DM-35, 12V in. 600 at 200 Ma out. Xlnt	12.95
Wincharger Dyna. 12 v in 440 @ 200 MA Out. new	12.95
BD-69 Rec. Dyna. 14 v in, 220 at 80 MA out. new	9.95
PE-73, 24 v in 1000 at 350 Ma. out. New 8.95, used	6.95

BC-357 Radio Beacon Receiver

62-80 Mc. radio controlled receiver. Contains 10,000 ohm plate
relay. Power requirements are 24 V. AC. @ .5 Amps. and 220
V. DC. @ 20 Ma. Swell for Garage Door Opener, Receiver,
and other remote control installations. **\$4.95**

Brand New	
12 V Heavy Duty Solenoid. New	\$ 1.49
5763 Tube. New	\$1.25 ea. 3 for \$3.50
815 Tubes. New	\$1.49 ea. 2 for \$2.75
826 Tubes. New	.89¢ ea. 3 for \$2.00
BC-654 Transceiver: 3800 to 5800 KC	Used: \$34.95

Cathode Ray Tubes

5HP4 or 5CPI	New 1.98
7BP7	New 2.98

2.00 Minimum Order. All prices Subject to Change without Notice. Canada & Mexico minimum 10.00. Cash
with Order. Sorry, no COD. California Orders Include 4% tax. Prices FOB Los Angeles.

SAM'S SURPLUS, 1306 Bond St., Los Angeles 15, California

For further information, check number 46 on page 124.

WESTON—SANGAMO

METERS.	ALL NEW	2" SQUARE
0-2 Ma	0-300 Ma	\$3.29 ea. SPECIAL 3 for \$9.00
0-5 Ma	0-500 Ma	
0-15 Ma	0-20 VDC	
0-50 Ma	0-40 VDC	
0-100 Ma	0-300 VDC	
0-200 Ma		
Heavy Duty Collins choke 4 Hy-300 Ma can take 500 Ma peaks. new \$3.95		
Bantam 1-watter, BC-746 plug-in transmitter tuning unit from WALKIE TALKIE, 140 mmfd APC type variable cond. plus assorted parts including chassis. Builds into low power trans- mitter (See CQ March '54) New, \$1.29		



OIL CONDENSERS

2 mfd 5000 vdc new	\$5.95	8 mfd 600 vdc new	1.49
2 mfd 1000 vdc new	1.95	4 mfd 600 vdc new 3 for 1.00	
10 mfd 600 vdc new	1.49	2 mfd 600 vdc new 3 for 50¢	

Mobile Microphones, newly assembled, W.E. D173015 similar
to the TC-128, push-to-talk switch, 3 cond. **\$3.95**
5' curl. cord, new

Chest Mike T-26 w/F1 Button. New \$1.49
F-1 Carbon Mike Element .59¢

RT-48A/TPX-1 IFF Trans-receiver 157-167MC. Complete with
Tubes, used, xlnt. Makes nice 2 Meter Rig \$12.95

BC 655 Signal Generator Range 17.5 to 160 Mc. good for T.V.
set alignment, use as transmitter fre. checker,
built in 0-200 Ua. Triplett 2" round Meter. New \$19.95

Brand New Headphones, HS-23, 2000 ohms, \$3.95. HS-33,
600 ohms, complete with brand new rubber
cushions **\$4.95**

New small cushions, pr.	.49
Used chamois cushions, pr.	.49
New lg rubber cushions, pr.	.29



Brand new Impedance matching transformer, plug
in, 2000 ohms to 600 ohms, takes std
plug, boxed 69¢ each, 3 for **\$1.95**

CD-307A cords, has JK-26 on one end
for phones, std plug other end **\$.97**

Stewart Warner Ammeter, 60-0-60 Amps, brand new,
95¢, 6 for 5.00

Phone-CW Filters, 1020 cycles, new, FL-5, 69¢ FL-8
with switch 1.89

GP-7 transmitter with all tubes less 803 tubes with 80
meter coil unit only 13.95
less tubes and coil unit 7.95

TU-7, 4.5-6.2 MC; TU-8, 6.2-7.7 Mc; TU-9, 7.7-10 MC;
TU-10, 10-12.5 MC; TU-26, 200500 Kc, choice, used,
for BC-375 transmitter, each 2.29

T-30 Throat Mikes, used, 5 for 1.00
3' Mast Sections, MS-49 thru 52, 50¢ each. 53 and above,
75¢ each. Special 1 each MS-49 thru 54, makes 18'
vertical 2.95

MN-26C direction finding Equipment

MN-26C Receiver w. dyna	14.95
MN-20E Loop	4.95
MN-52H Az Cont Box	2.95
All above new, special, 1 each for	21.95
Antenna Insulators, Bendix MT-48C, plated end caps, new 15¢ ea., 10 for 1.25	
Control Box w/5 Ma S meter, special	1.98



SCR-522, exc. condition. Contains Receiver, Transmitter,
Modulator, tubes, tunes 100-156 MC, covers 2 m w/o
modification 29.50

522 Control Box—BC602 New 4.50

New transmitters, GF-11 for 12 volts, or GF-12 for 24
volts, with tubes and built in modulator—less tuning
unit, GF-11 \$8.95 GF-12 8.95

BC-223 Xmitter New With all Tuning Units 29.50
Used W/One Tuning Unit 18.95

Right Angle Coax Connectors. Type M-359 and M-359A
(83-1AP) .29

TG34 or TG10, 1 Hour Code Tapes

No. 10, No. 13	New, ea. 1.25
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Own this Popular
WRL
Globe Scout 680



65 watts CW; 50 watts on
fone, plate modulated.

A compact, self-contained,
bandswitching transmitter for
operation of the 6 through 80
meter bands, with built-in
power supply. High level mo-
dulation is maintained. TVI-
suppressed cabinet. Pi-network
output on 10-80M; link-coupled
on 6M, matching into low im-
pedance beams. New type,
shielded meter. Globe Scout
66 is identical, except band-
switching 10-160M. Size:
8x14x8"

Kit.....\$89.95
Wired & Tested...\$109.95
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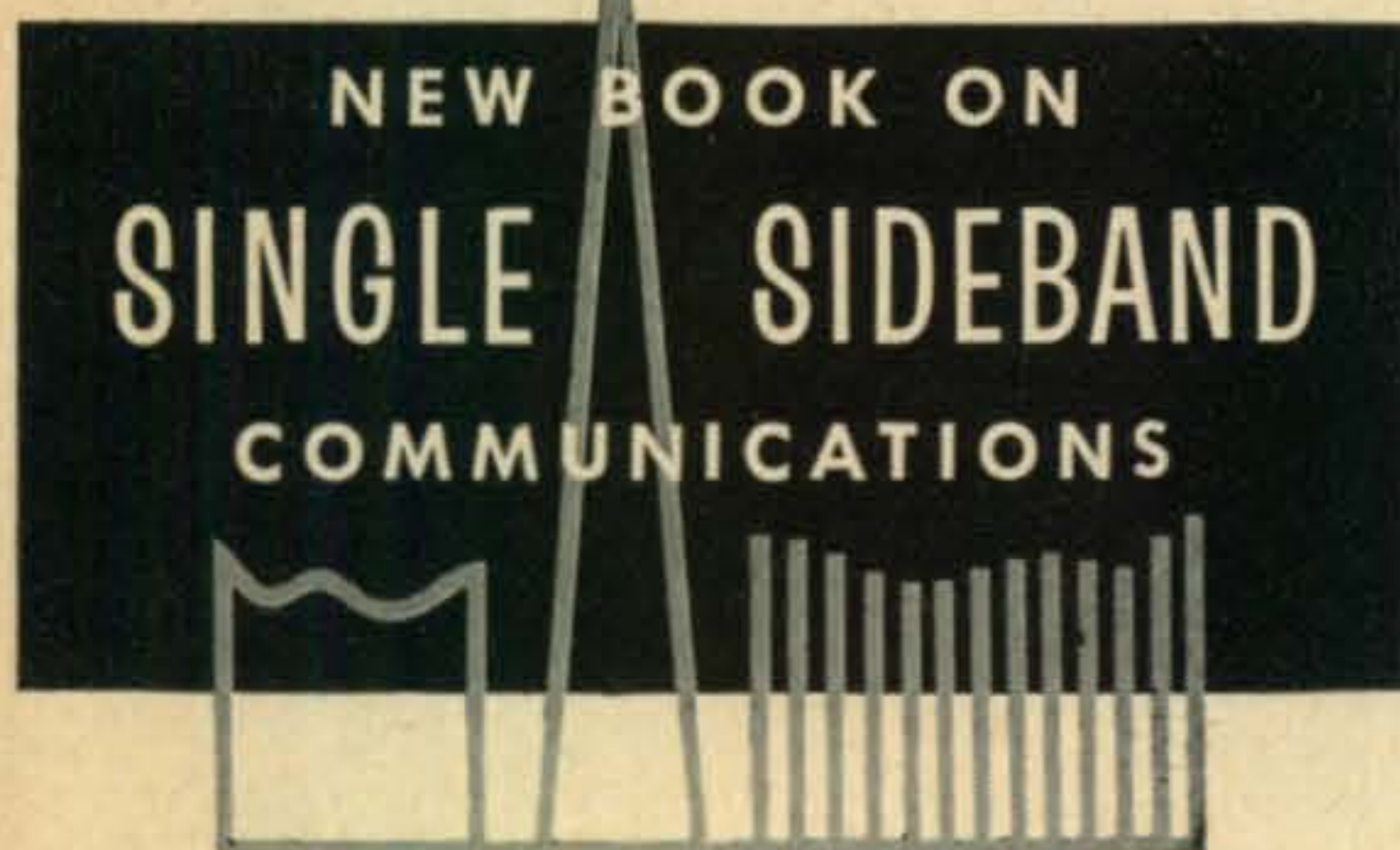
428 CENTRAL AVE.
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Phone 5-2451

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EXPORT BUSINESS WELCOMED

For further information, check number 47 on page 124.

NOW AVAILABLE...



Just released by the Philco Tech-
nological Center . . . gives compre-
hensive coverage of the Concepts of
SSB . . . Transmitter and Receiver
Theory . . . Transmitter and Receiver
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140 pages—easy to read and easy to
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22nd & Lehigh Avenue, Dept. TC-1
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For further information, check number 44 on page 124.

Paint It [from page 33]

markings. After the polish dried the excess was
wiped off with a slightly damp paper napkin.
Although shoe polish might seem to be a tem-
porary measure it has proven quite adequate
since there is no wear involved. White paint
could have been used and the excess cleaned
off with paint thinner (*paint thinner* will not
cut the lacquer finish) but it didn't warrant the
time and trouble.

The total time required for the two receivers
was about 16 hours; the cost of painting plus an
extra quart of lacquer was \$4.50. The cost will
no doubt vary widely depending on the type of
finish (lacquer, enamel, hammertone, or crackle)
and on how well you know the painter. If you
plan to update the appearance of your equip-
ment by using one of the newer and more
popular shades of gray remember that knobs
which match the old color will have to be
changed or painted.

Equipment that is not marked with stamped
or engraved lettering would of course require
more time and effort. The only simple solutions
appear to be marking by stamping with a set
of steel letter stamps or the use of readily avail-
able decals. Both methods should give profes-
sional results if they are done correctly.

If you are doubtful about the results you can
always experiment with an unused piece of
equipment or sheet metal. Using the picture as
a basis of comparison, you can see that it is
well worth while to refinish marred equipment
if you place any value on its appearance. ■

Scratchi [from page 12]

Scratchi evidently drilling into gas tank
when putting in bolts. Gas vapor are leaking
up and when keying rig relay are making
spark and Kablooie!! hole thing are egg-
sploding.

You knowing, Hon. Brother Itchi not even
mad at me, he so scared I hurt. I not reely
mad ether, on acct. now I having to getting
another car. Maybe can getting one which
resent model, say maybe ten yeers old.

Respectively yours,
Hashafisti Scratchi

Super-Pro [from page 32]

of your refurbished Pro. You keep creeping up
on the signal—then—plop! There it is. I believe
this is due to the decreased loading on the rf
stages and the increased AVC action due the
6SG7.

Anyhow, now you're really finished with the
real work. Hang the set on the business end
of the antenna lead and twiddle the band you
habitually operate on. Notice any difference?
You should be able to dig those background
stations right out of the gravel now. We've
noticed that sets done over this way give un-

Presenting...



THE COMPANION



MB 6

- 5 Bands 10-15-20-40-75 meters
- AM-CW SSB Operation Increased selectivity
- Noise balanced squelch
- 100KC crystal calibrator
- Sensitivity 1 micro volt or better on all bands

MB 565

- 5 Bands 60 Watts impact
- VFO or Crystal Control gang tuned
- Band Switching—full dial scale band spread
- Automatic modulation control, speech filter and limiter. Increased talk power
- Car dash dimmer connections for dial lights

POWER SUPPLIES—TV 630 combination receiver & transmitter power supply 600v 200ma — 290v 100 ma 75 v 10ma regulated
RVP-250 Receiver Power Supply 290v 100ma
TV-600 Transmitter High Voltage Supply 600v 200ma
RTS-600 Complete fixed station supply and speaker



2794 MARKET ST. • SALEM, OREGON

For further information, check number 48 on page 124.

Presenting—A NEW LINE OF GUARANTEED PRECISION QUARTZ CRYSTALS

For Amateur and Novice Amateur Net **\$1.99 ea.**

For C.A.P. Aircraft Mars-Marine Amateur Net **\$2.99 ea.**

*Above Crystals are available in FT-243—(Master ML1) DC11-3/4 Spacing 1/8" Pin (Master ML2) DC 34/35—(Master ML3) FT171 Banana Pins (Master ML4). Special Mounts upon request.

NOVICE

BAND	XTAL FREQ. RANGE	TYPE	AMATEUR NET \$1.99 Tol. .1% ea.
80 M	3701 to 3749	FT-243 & DC 34/35	
40 M	7151 to 7199	FT-243	
40 M Dblg.	3576 to 3599	FT-243 & DC 34/35	
15 M	7043 to 7083 X3	FT-243	
15 M	5276 to 5312 X4	FT-243 & DC 34/35	
2 M	8056 to 8165 X18	FT-243	

AMATEUR

BAND	XTAL FREQ. RANGE	TYPE	AMATEUR NET \$1.99 Tol. .1% ea.
80 M	3500 to 4000	FT-243 & DC 34/35	
40 M	7000 to 7300	FT-243	
40 M Dblg.	3500 to 3650	FT-243 & DC 34/35	
20 M	7000 to 7150 X2	FT-243	
15 M	7033 to 7083 X3	FT-243	
10 M	7000 to 7425 X4	FT-243	
6 M	8334 to 900u X6	FT-243	
2 M	8000 to 8222 X18	FT-243	

FOR C.A.P. MARS & MARINE 1500 KC 10,000 KC—type ML-1, 2, 3, 4* (tol. .005%) . Amat. Net **\$2.99 ea.**
Special frequencies such as—Aircraft, Converter, Spec. Applications, etc. Tol. .005% (.005% Tol. guar. only with your oscillator circuit diagram) (ML-1* and ML-2* Mounts only (Freq. range 1005 to 5000 KC. Amat. Net \$2.99 ea.

Master CRYSTAL LABS.
A DIVISION OF MASTER MOBILE MOUNTS
1306 BOND ST., LOS ANGELES 15, CALIF.

For further information, check number 50 on page 124.



1/2" Spacing — .093 Pin



3/4" Spacing —
1/8" Pin



3/4" Spacing —
.1875 Dia.



3/4" Spacing — Banana Plug



NEW HAMMARLUND HQ-110 RECEIVER

Dual Conversion • 6, 10, 15, 20, 40, 80 and 160 meter bands • Separate SSB linear detector • Q-multiplier • Dual dials • Crystal calibrator • Crystal control • Separate stabilized BFO • Dial scale rest • Excellent sensitivity • Modern functional design • All this, and much more for

ONLY \$229* *Clock-timer \$10 extra.

10% down—24 months to pay. Your trade-in may cover down payment. Export business welcomed.

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For further information, check number 53 on page 124.

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2, 6, 10 — Meter MOBILE EQUIPMENT

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Motorola F.M. Receivers, Double Conversion **\$55.00** each

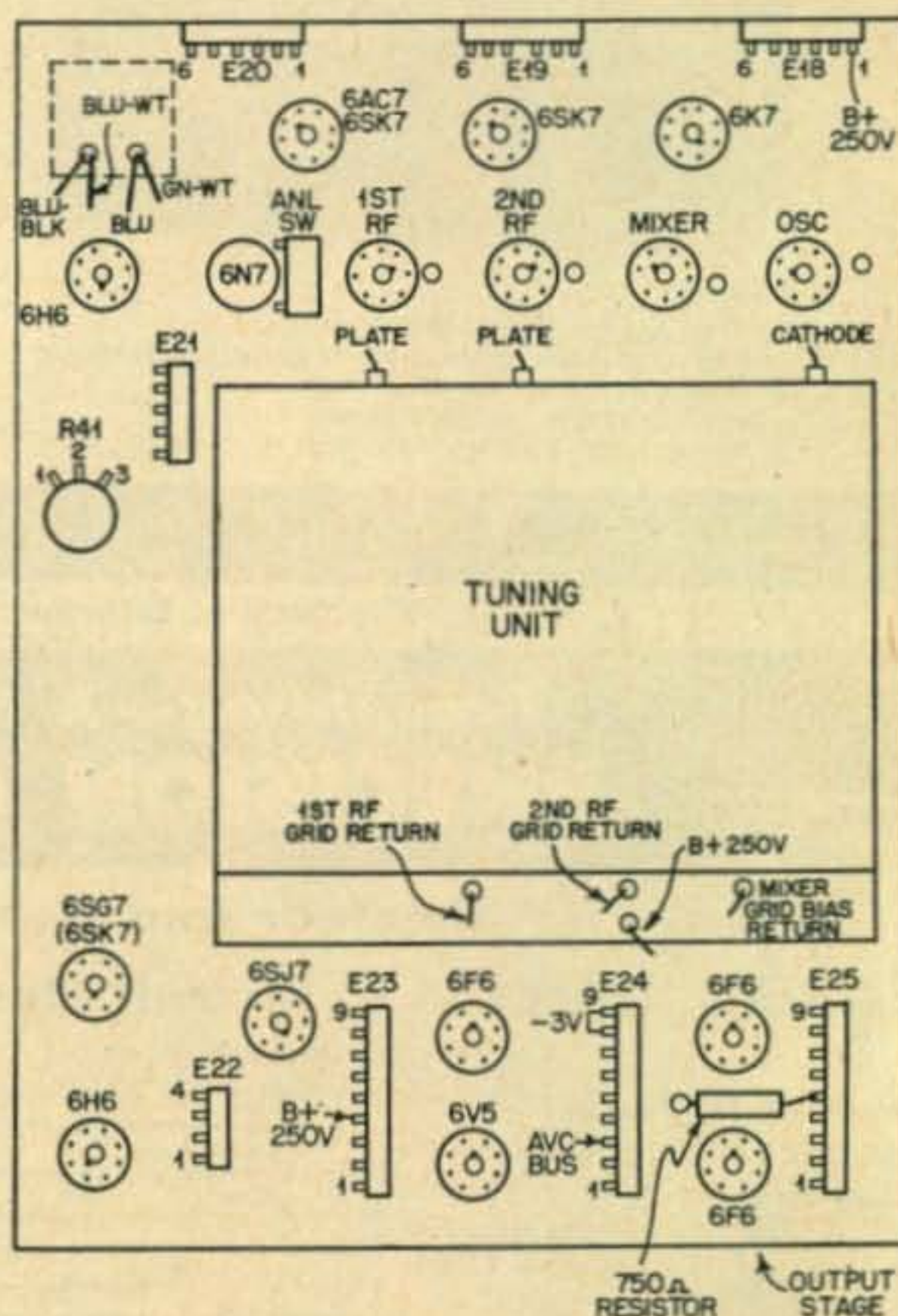
Motorola F.M. Transmitters **45.00** each

COMMUNICATIONS ASSOCIATES

267 Washington Street, Dorchester, Mass.
Telephone: AVenue 2-8088

Super Pro [from page 104]

usually loud and clear signals sounding just like 40 db over S-9 when the S meter is just barely wiggling. Man, when he's so far down he's in the shot noise, it ain't your set, it's him! You'll notice now that the set doesn't have the usual "Driftmaster" characteristics. This is due the isolation afforded by the cathode follower between the oscillator and mixer. Frequently pulling on strong signals is also absent as is the considerable cross-modulation we'd been bothered with previously. You might say the old 6L7 was anything but a good mixer! The considerably better tone due the unbypassed 1.5 k Ω 6J5 cathode resistor is probably welcome. However, if the hopped up 6F6's should splatter on high levels, jump the remaining 0.001 mfd bypass across the output Xfmr primary. That should cure the bug.



If you're doing a "Christine Jorgensen" on a BC794 you might find that some filament chokes will help in eliminating losses at the high frequencies in the rf end of the set. Wind some chokes of No. 24 enameled wire on a 3/16" drill and stick 'em in the heater leads of all the front end tubes. Also, don't worry about long grid leads from the tuning unit. We've converted over 100 of these sets and haven't had a squawk yet! Remember, this is a *practical*, do-it-yourself story. For arguments which discuss the pros and cons, see the literature.

SSB fans will find the set now is excellent for their particular form of madness. Me—I like it too! See you in the looney bin . . . 73 . . . es much DX!

"VW Special" [from page 38]

is very slight. However, if a good portable field strength meter is available it will facilitate tuning.

To modulate the transmitter, R10 on the modulator is adjusted by observing a hastily connected O-100 milliammeter connected in the plate circuits of the 12AX7's (12BH7A's). The plate current will kick up between 35 and 40 mils upon whistling into the mike. Resting current will vary according to the voltage available but will usually hover around 10 to 15 mils.

Powered by either a 300 volt 100-120 mil power pack or a dynamotor of like rating, this effective little transmitter will not take a back-seat to many of its "big brothers." Although it is in the "flea power" class as is the car which carries it, it has a big voice and is the economical approach to pleasant mobile operation. ■

PARTS LIST

- | | |
|---|---|
| C1—25 mmfd Silver Mica | T1—Interstage Transformer (Triad 31 X) |
| C2—50 mmfd Silver Mica | T2—Driver Transformer (Triad A81 X) or UTC |
| C3—50 mmfd Ceramic | —S8 |
| C4—5 to 15 mmfd | T3—Modulation transformer UTC S-18 (12 watts) |
| C5—10 mfd 450 V Electrolytic | RFC1—1mh 50 mils |
| C6—.01 mfd Ceramic | RFC2—2mh 100 mils |
| C7—75 mmfd Ceramic (60 MMFD plus 15 MMFD in parallel) | RFC3—2½mh 100 mils |
| C8—60 mmfd Ceramic | PC—Parasitic Choke 9 Turns #20 Wire on 100 ohm Resistor |
| C9—5 to 15 mmfd | L1—#24 Wire 28 Turns on National XR-50 Slug tuned form (14 mc) |
| C10—100 mmfd Ceramic | L2—#26 Wire 40 Turns on National XR 50 (3.5 mc) |
| C11—.001mmfd Ceramic | L3—#22 Wire 30 Turns on National XR 50 (7 mc) |
| C12—.001 mmfd Ceramic | L4—#18 Wire 13 Turns (CTC-30 Coil) (30 mc) |
| C13—.001 mmfd Ceramic | L5—#18 Wire 6 Turns 1" Diameter (30 mc) B & W 3014 |
| C14—.001 mmfd Ceramic | L6—#22 Wire 44 Turns 1" Diameter (3.5 mc) tapped at 20 turns (7 mc) |
| C15—.001 mmfd Ceramic 1 KV | Airdux 832T (32 turns per inch) |
| C16—140 mmfd Variable (National HFA 140) | S1—S2—Tap Switch 2 poles 1 section 5 positions (Centralab PA 1003) |
| C17—540 mmfd Midget Broadcast Dual Variable; sections connected in parallel | S3—Steatite Miniature Tap Switch (Centralab PA 2003) 2 poles 1 gang 5 positions |
| C18—10 mfd 25-50V Electrolytic | S4—Double pole double throw toggle switch |
| C19—.001 mfd Ceramic | MA1—Midget milliammeter O-1 mils (International Instruments Corp) |
| C20—.1 mfd 450 V Paper | Modulator Chassis LMB 143 |
| C21—500 mfd 12-25 Volt Electrolytic | J-2—Closed circuit jack (if used) |
| R1—47K ½ Watt | |
| R2—100K ½ Watt | |
| R3—68 ohms 1 Watt | |
| R4—2500 5 Watts | |
| R5—47K 2 Watts | |
| R6—1600 5 Watts | |
| R7—R8—Meter Shunts (See Text) | |
| R9—18K 10 Watts | |
| R10—500K Potentiometer Audio Taper (Centralab B-60) | |
| R11—1K 1 Watt | |
| R12—200K 1 Watt | |

SEMICONDUCTOR PRODUCTS

A magazine devoted exclusively to the newest developments in transistors, rectifiers, and diodes, by the publishers of CQ.

The March 1953 issue of Fortune carried an article titled "The Year of the Transistor" with a sub-caption reading: "The transistor and other solid-state devices open shining vistas in military electronics, computers, telephone and home instruments. If you have vacuum tubes in your plant, office, or products, it will pay you to know their solid-state rivals".

Here is a brand new magazine published bi-monthly offering complete editorial coverage to the transistor-minded engineer.

Our staff of editors and authors represent the most competent authorities in the transistor field.

This magazine is a priceless bargain. You may be a charter subscriber for \$5 for 12 issues, \$3 for 6 issues.

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Company

Title

For further information, check number 52 on page 124.



THE NATIONAL NC-300

Features greatest sensitivity at any price! Greater stability than most receivers. 10 dial scales cover 160 to 1 1/4 M with exclusive converter provision with scales calibrated for 6, 2 and 1 1/4 M, using a special 30-35 mc. tunable IF selector—.5 Kc., 3.5 Kc. and 8 Kc. Provides super selectivity, gives optimum band width for CW, phone, phone net or VHF operation. Separate linear detector for SSB. High speed inertia tuning dial with 40 to 1 ratio. Exclusive optional RF gain provision for best CW results allows independent control of IF gain. Giant "S" meter. Dual conversion. Calibration reset adjustable from front panel. Crystal filter with phasing control and 3-position band width control. First IF freq. — 2215 Kc., second: — 80 Kc. 10 tubes plus regulators and rectifier. Antenna input impedance: 50-300 ohms. Output impedance: 8 ohms. Less speaker.

**FULL
PRICE
\$399**

10% down — 24 months to pay. Your trade-in may cover down payment. Export business welcomed.

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For further information, check number 53 on page 124.

FREED MINIATURE HIGH Q TOROIDS

FOR IMMEDIATE DELIVERY FROM STOCK

Cat. No.	Ind. MHY	Cat. No.	Ind. MHY	Cat. No.	Ind. MHY	Cat. No.	Ind. MHY
to 15 KC		10 to 50 KC		30 to 75 KC		50 to 200 KC	
F2050	1.	F2100	0.1	F2140	0.1	F2180	0.1
F2051	3.	F2101	0.2	F2141	0.2	F2181	0.2
F2052	5.	F2102	0.3	F2142	0.3	F2182	0.3
F2053	10.	F2103	0.4	F2143	0.4	F2183	0.4
F2054	15.	F2104	0.5	F2144	0.5	F2184	0.5
F2055	30.	F2105	1.0	F2145	1.0	F2185	0.6
F2056	50.	F2106	2.0	F2146	2.0	F2186	0.7
F2057	75.	F2107	3.0	F2147	3.0	F2187	0.8
F2058	100.	F2108	4.0	F2148	4.0	F2188	0.9
F2059	150.	F2109	5.0	F2149	5.0	F2189	1.
F2060	200.	F2110	7.5	F2150	7.5	F2190	2.
F2061	300.	F2111	10.	F2151	10.	F2191	3.
F2062	400.	F2112	15.	F2152	15.	F2192	4.
F2063	500.	F2113	20.	F2153	20.	F2193	5.
F2064	750.	F2114	30.	F2154	30.	Case size: 3/4"x11/32" x25/32h.	
F2065	1,000.	F2115	50.	F2155	50.		
F2066	1,250.	F2116	75.	F2156	75.		
F2067	1,500.	F2117	100.	F2157	100.		
F2068	1,750.	Encapsulated 1"x7/8"h. When ordering hermetically sealed units add H, encapsulated units MR to Cat. No.					
F2069	2,000.						

Send for NEW 48 page transformer catalog. Also ask for complete laboratory test instrument catalog.

FREED TRANSFORMER CO., INC.

1706 Weirfield St., Brooklyn (Ridgewood) 27, N. Y.

For further information, check number 55 on page 124.

QSL's [from page 45]

areas.

Separation techniques described for previous examples also apply here. Very little zip-a-tone has been used. However, where it is used, white-out corresponding portions of the black-plate artwork. Figure 9 illustrates the cycle of drawings for separations.

Plate-Making and Printing

The separation artwork is now ready for plate making. Production of color plates should be left to your printer's source. Printers get "trade" prices and may pass on a portion to you. Regardless of whether they do or do not, you won't be able to buy cheaper through direct contact. So, let the printer do it for you.

While this part of the article explained separation of artwork for two-color linecut printing, it dealt with uncomplicated drawings. More complicated separation work, including delicate areas of register, will be considered in the next and final portion of the article. At that time we will consider two-color printing plates using halftone and linecut plates.

To be continued

De W2NSD [from page 8]

band and you tune in the stations with the BC set at around 1100 kc. It worked perfectly and all sorts of SW stations came roaring in. Move over SWL's, while a narrow minded editor listens a bit.

Even with the Transcon-6, Gonset G66, and Gonset SW Converter mounted under the dash I had lots of room for a swinging travel desk for my logs and a swinging lunch tray to help keep me overweight.

If someone will come out with a mobile SSB rig that I can afford I'll sacrifice that swinging lunch tray and get hot on 20M SSB mobile. Until then I guess I'll stick to six meters from the car. There is so much activity on six these days that there usually isn't much problem getting a contact. Mobiling has gotten to be fun, with the six meter rig and the SW converter.

Tube Care

A brief walk through my 304TL storeroom reminded me that I haven't seen anything lately on the aging of tubes. A lot of us stocked up on tubes back in the heyday of the surplus sales and figure that we are all set for some time to come. Well, maybe we are. But there is one problem that a lot of us might overlook if some alert editor (?) didn't bring it up.

As a tube sits around on the shelf two things happen. The elements starts to sag a bit and air gradually leaks into it. The first situation can be corrected by turning your tubes over

YL [from page 94]

titled "Isle Royale Calling," has just been published by Dodd, Mead and Co. The adventures of 17-year old Jim St. Cyr and his two younger brothers, shepherded by their widowed Forest Ranger father, make especially good reading for young people, Ham and non-Ham alike. Setting for this novel, Isle Royale in Lake Superior, provides a fine atmosphere for adventure, mystery, and interesting outdoor activities and nature lore.

In our review of Helen's earlier book, Sim Barton, Girl Radio Operator," back in 1953, we commented that we'd have liked less love story and more radio. In Helen's latest book there is no love story but plenty of radio, with a couple of ship rescues, emergency traffic, Ranger Service communications, general Hamming and the unravelling via radio of the mystery in the story.

Helen has done a fine job on this book—the YLs are proud that you are one of us, W8GJX!

With the Clubs

Another brand new YL club to report this month—The Georgia Peach YL Club, or as they call themselves, the Georgia Peaches. YLs interested in forming a club met on the air July 25, 1957, and this was followed by a get-together at K4KKW's QTH in mid-August. Officers for the coming year are: President, K4KKR, Peggy; V.P., K4DNL, Olivia; sec-treas., K4GCT, Helen; NCS, W4UMM, Sarah; publicity chairman, K4CZR, Kay; historian, K4KKW, Arlene—all of Atlanta. Membership chairman is K4LVE, Gladys, of Valdosta.

The Georgia Peach YL Net meets every Thurs. at 0900 EST on 3985 and any YLs are invited to call in. However, only YLs who live in Ga. can become members of the club. Dues are \$1.00 a year and business meetings are held the last Thurs. of each month. The Georgia Peaches are offering a club certificate, with a Georgia Peach on it, of course, to anyone offering proof of contact with 10 members of the club, contacts to be made other than during net time.

We have a WHO (Women Ham Operators) club of Tarrant County, Texas (Ft. Worth area), and also a WHOOT YL club at Dallas. WHO was written up here in Sept. CQ. WHO originally was organized in Dallas with YLs from both Dallas and Ft. Worth. Because of the distance and interest shown in both cities it was decided to form separate clubs and the Dallas YLs voted to change their name, but retaining as much of the "WHO" as possible. WHOOT was chosen and means "Women Ham Operators of Texas."

The Dallas club was organized in Nov. 1956 and has grown from the original 5 members

[Continued on page 125]



ARC-5/R28 RECEIVER

2-meter Superhet, 100 to 156 Mc in 4 crystal channels. Complete with 10 Tubes. **\$20.45**

110 V AC Power Supply Kit for above \$9.75

ARC-5/T-23 TRANSMITTER

100-156 Mc Includes 2-832A, 2-1625 Tubes, all crystals. BRAND NEW..... **\$19.95**

SPECIAL OFFER! Limited quantity ARC-5/T23 xmitters. BRAND NEW, less tubes.....\$7.95
Excellent Used, less tubes.....\$5.95

ARC-5 MARINE RECEIVER-TRANSMITTER

Navy Type Comm. Receiver 1.5 to 3 Mc BRAND NEW with 6 tubes..... **\$16.95**

Navy Type Comm. Transmitter 2.1-3 Mc BRAND NEW with 4 tubes and Xtal..... **\$12.45**

LORAN APN/4 OSCILLOSCOPE

Easily converted for use on radio-TV service bench.

Completely Assembled
BRAND NEW!

Supplied with 5" **\$15.95**
Scope type 5CP1



SCR-274 COMMAND EQUIPMENT

ALL COMPLETE WITH TUBES Excellent Brand

Type	Description	Used	Used	NEW
BC-453	Receiver 190-550 KC.....	\$10.95	\$12.95	\$16.95
BC-454	Receiver 3-6 Mc.....	7.19	8.29	11.95
BC-455	Receiver 6-9 Mc.....	5.25	7.95	11.95
BC-456	Modulator	2.95	3.45	4.95
BC-450	3-Receiver Control Box.....		1.49	1.95
BC-451	Transmitter Control Box.....		1.25	1.49
BC-696	Xmtr 3-4-Mc (like new)....		6.95	8.88
BC-457	TRANSMITTER—4-5.3 Mc. complete with all tubes and crystal. BRAND NEW.....			\$7.88
BC-458	TRANSMITTER—5.3 to 7 Mc. Complete with all tubes and crystal. BRAND NEW.....			\$7.88
BC-459	TRANSMITTER—7-9.1 Mc. complete with all tubes and crystal. BRAND NEW.....			\$11.95
ARC-5/T-19	TRANSMITTER—3 to 4 Mc. BRAND NEW complete with all tubes & crystal.....			\$8.88

110 VOLT AC POWER SUPPLY KIT

For All 274-N and ARC-5 Receivers

Can be assembled quickly and easily, on pre-drilled chassis. Plugs into the rear of any model 274-N receiver and delivers 24 volts as well as "B" voltage. Complete kit of parts with metal case, instructions **\$7.95**

Factory wired, tested, ready to operate.....**\$11.50**

SPLINED TUNING KNOB for 274-N and ARC-5 RECEIVERS. Fits BC-453, BC-454 and others. **49c**

DYNAMIC HANDMIKE, with "Press-to-talk" Switch, cord and plug—BRAND NEW, only**\$2.95**

DYNAMIC HEADPHONES, 600-ohm impedance, with large earphone cushions, cord and phone plug. BRAND NEW, special.....**\$3.95**



BC-906 FREQ. METER—SPECIAL!

Cavity type, 145 to 235 Mc. BRAND NEW in original factory packing, complete with antenna. Manual incl.

OUR LOW PRICE **\$9.99**

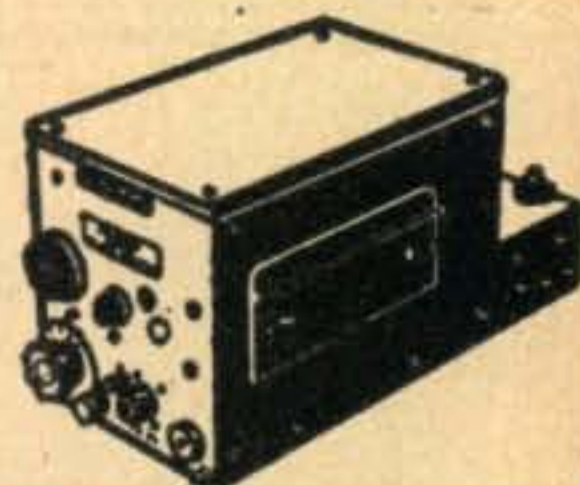
234-258 MC RECEIVER

AN/ARR-2

BRAND NEW 11-tube UHF Tunable Receiver with schematic. Only a few at this low price! Complete with tubes **\$9.99**

With 28V 1.6A Dynamotor, complete**\$12.98**

110 VOLT AC POWER SUPPLY KIT for above**\$9.75**



SCHEMATIC DIAGRAMS For any equipment on this page, each **50c**

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For further information, check number 54 on page 124.

December, 1957 • CQ • 109

the Collins 75A-4



Designed expressly for Operation
on the 7 HF Amateur bands

This outstanding SSB receiver features AVC on SSB and CW, separate detectors for AM and SSB, passband tuning, rejection tuning, Gear Reduction Tuning Knob, superior selectivity and many other time-proven Collins features. Net Price ----\$695.00

*Complete line of Collins equipment
and accessories.*

DOW RADIO, INC.

1759 E. Colorado St., Pasadena, California

For further information, check number 56 on page 124.

A QUALITY COMMUNICATION RECEIVER at a sensible price

- 9 Tube
- 4 Bands
550 kc to
30 mc
- A.N.L.
- Bandsread
- Power Trans.



Write for details

\$99⁹⁵

ALCO

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E-Z-CODE

JUNIOR

uses electric pencil and printed-wiring. Simply draw pencil down lettered slot and buzzer sounds off dots and dashes. Operates on single flashlight battery. Available now at your local Aerovox Parts Distributor. Write for free booklet telling all about code and name of your nearest distributor.



\$3⁹⁸

AEROVOX CORPORATION • New Bedford, Mass.

every few months. The second by applying the filament voltage for some time before socking the high voltage to 'em.

Nothing is perfect, as you have heard many times. Apply that psychology to the metal-to-glass seals on tubes and you will understand that no matter how hard the manufacturers try, they cannot keep some air from slowly working its way into these joints. Tubes like the 829 and 832 with their large number of seals pick up quite a bit of air over the years and may well light up like a bulb if plugged into the rig without aging. All old tubes need aging to remove accumulated air before you can expect them to give good performance. Even new tubes will have a better chance at a long life if they are given the treatment.

Broadcast stations make it a practice of keeping a full set of spare tubes on hand and rotating the whole bunch after every so many operating hours. This you haven't been doing, right? You don't run your station any more professionally than I do so here is how to keep from melting those tubes down when you take them off the shelf, blow off the dust, and plug them in.

Run the tube with the full rated filament voltage for at least 24 hours before applying any plate or screen voltage. If the tube has lots of seals you better make it 48 hours. Then, with reduced plate voltage and enough drive for a small amount of plate current run it for another hour or so. By then you should be able to run it at full ratings and get normal output.

One of the many uses of my *Heath Battery Eliminator* is to fire up spare tubes every six months and age them. I find I don't have to take them out of the carton for this, generally. When aged, I put them back on the shelf turned so the elements can sag back toward their original position and with the carton marked as to when and how long the filaments were run.

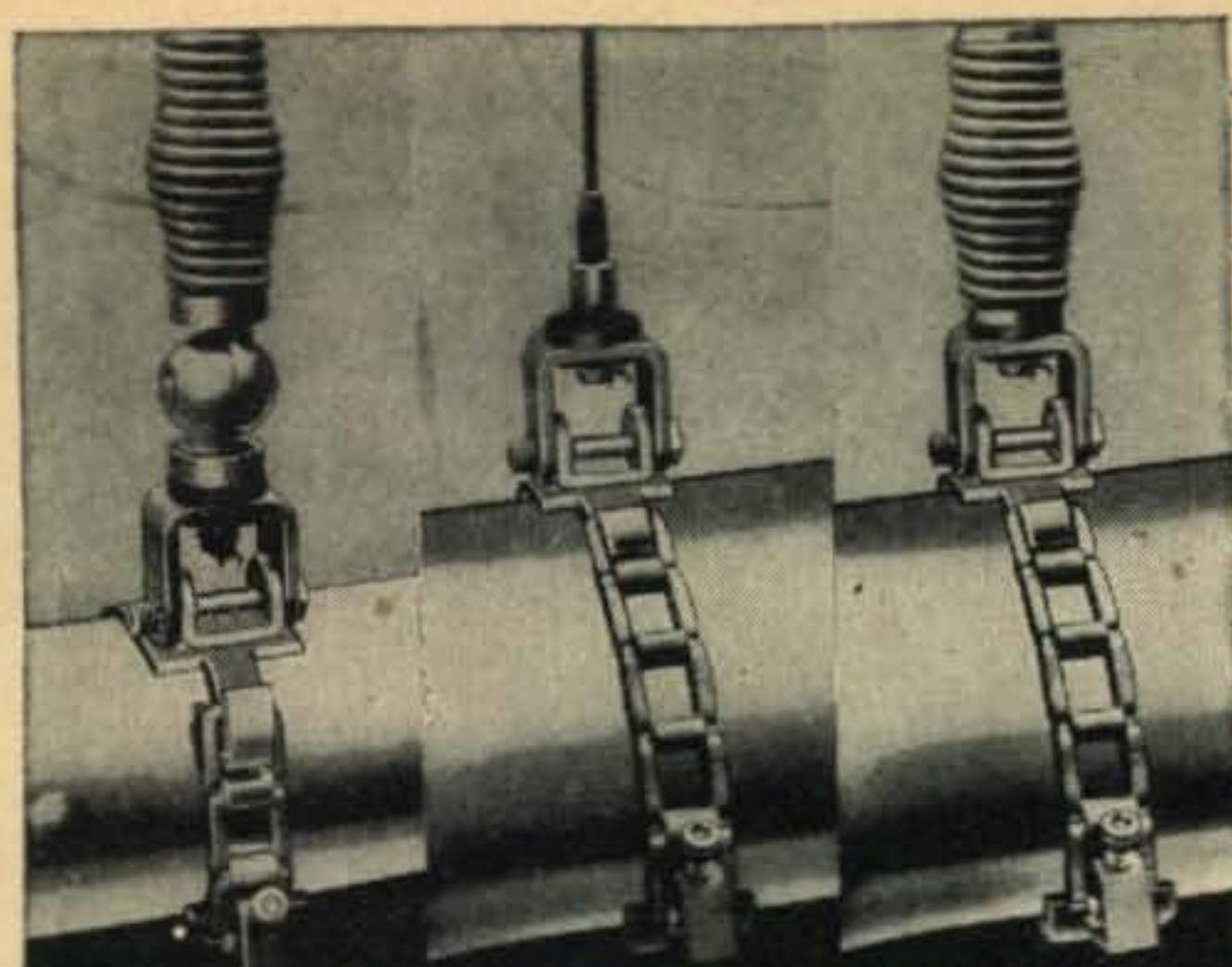
New Call Signs

Hamfesters frequently ask me what the FCC is going to do when they run out of "W" and "K" calls. A recent letter from them indicates that they are thinking seriously of switching to two letter prefixes in the WA-WZ block, particularly in the second and sixth call areas where they are almost plum out of barrel scrapings. How are they going to make a Novice call out of that? Hmmm, WAN2QBJ calling CQ.

SWL To The Rescue

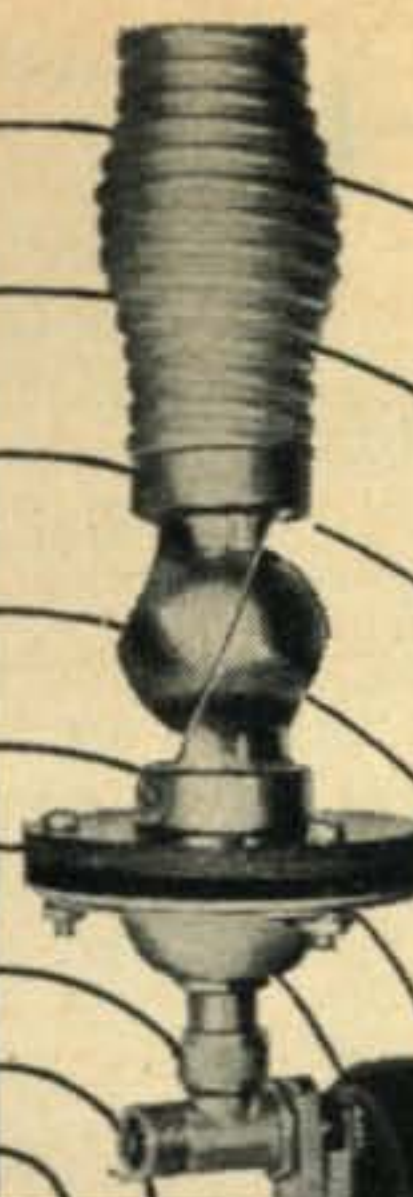
A recent letter from John Brown, VE7JB tells of VP2DA and his attempt to get that last state for WAS before leaving for Stateside. The missing was Wyoming and Bill was down

[Continued on page 114]



BUMPER MOUNTS

No. 444 \$17.80 No. 445 \$7.95 No. 446 \$13.45



BODY MOUNT
No. 321
less spring
\$7.95

BODY MOUNT
Heavy duty
Stainless Steel
Coax. Conn.
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Other
Mounts
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SWIVEL BALL-JOINT
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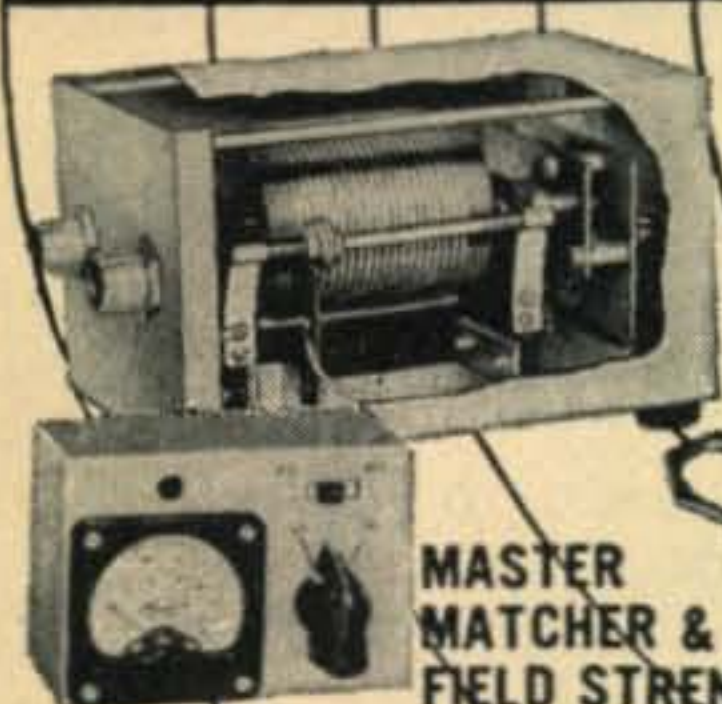
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Automatically tunes the entire
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For further information, check number 57 on page 124.

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AMATEUR BAND- Your Freq. Choice.

- 160-180-40 Meters, FT-243 Mounts,
Fund. Freq. Tol. 01% each \$1.99
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Stock Freq. also available each 59¢
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- FT-241 SSB. Matched Pairs.....pr. \$1.95
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370 KC to 540 KC.....ea. 49¢
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- FT-241 200 KC or 500 KC.....ea. \$1.00
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- Novice Bands—80, 40, 6, 2 Meters.
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Above available in 1/2" Spac., .050 Dia. or
.093 Pins. State choice. 01% Tol. ea...\$2.50
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Spac., .093 Pins. Also 3/4" Spac.—1/8" Dia.
Pins. .005% Tol. ea.....\$4.10
- Overtones—3rd & 5th—Tol. .005%
10 to 30 Meg. ea. \$3.75 | 54 to 75 Meg. ea. \$4.25
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FT-243—Marine & C.A.P.—3/4 x 1/8
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All U.S. Crystals Guaranteed — Order Today!

Include 5c per crystal for postage and insurance. Calif. add
4% Tax. No. C.O.D'S. Prices subject to change. Ind. 2nd
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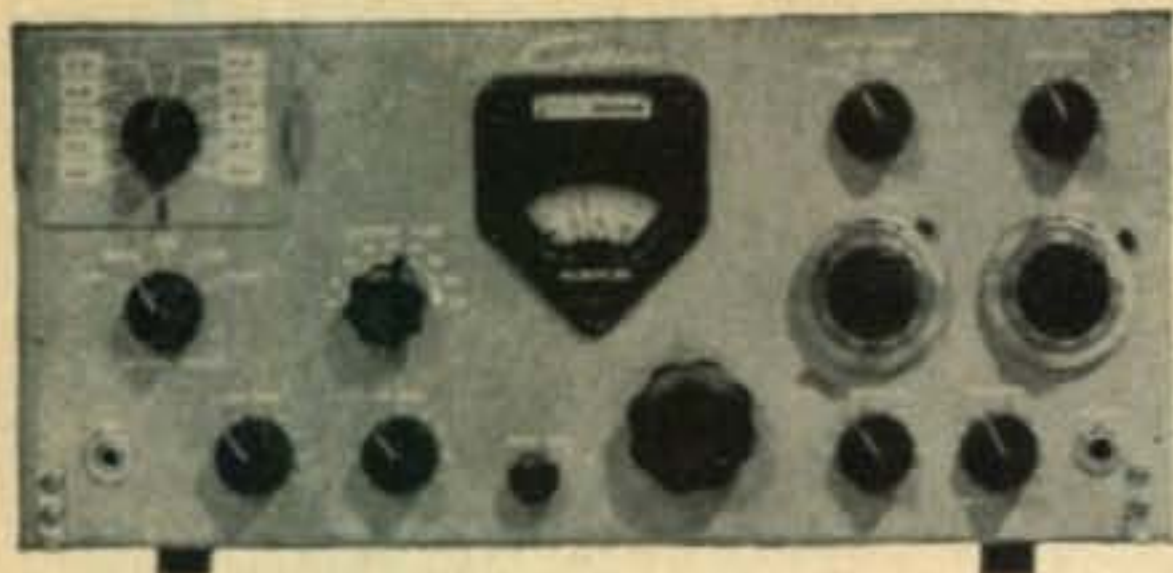
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For further information, check number 58 on page 124.

the *Collins* KWM-1

SSB Mobile Transceiver



FIRST Mobile SSB Transceiver — 175 watts PEP input, 14-30 mc. Excellent frequency stability. Use as mobile or fixed station without modification. Break-in CW using VOX circuits, side tone for monitoring CW. Ten 100 kc. bands available anywhere in the 14-30 mc range. 6 1/4" H x 14" W x 10" D. Net price.....\$820.00

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Is The Talk
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Club Project [from page 48]

mobiles were to operate and what results they should report. Cars were dispatched to various polling places, and the operation was underway. Each mobile had two or more persons assigned to it to facilitate orderly reporting and driving. Each of the two fixed stations had extra personnel to tally results on a form prepared by the paper, which listed candidates and measures in the same order as the official ballot used in voting.

Driving to a designated place, an operator would check with the chairman of the election board to determine when results would be available. When the figures could be obtained, they were copied to the prepared tally sheets and radioed to the newspaper. Mobile reports were "spot tallies", usually incomplete, and when complete reports were ready, the work of the mobiles was finished and operations were transferred to the courthouse where final results were relayed to the paper. Mobiles finished their assignments by 11:00 p.m., while the official results continued to pour in from the courthouse until after 1:00 a.m.

Both Republican and Democratic officials, hearing that the amateurs were furnishing communications, requested receivers at their headquarters in order to monitor results as they were reported. To capitalize on interest in the results, and also to keep inquiring hands from twisting knobs, an operator was placed at each receiver to record results and to answer any question about amateur radio which might be asked.

Operation election went off smoothly—every minute of air time was utilized and results were sent in quickly and efficiently. The biggest fault of the whole project was expressed by the editor of the paper, who, when queried as to how things were going, exclaimed: "I never dreamed things would work this smoothly—the only trouble is that the results are coming in faster than we can tabulate them."

Ham publicity from the press was excellent. Full newspaper coverage before the election told of the part ham operators would play in gathering election results, and a photo was published the day following election, showing the station and operating gang in their temporary shack at the newspaper. In view of favorable publicity and comment, club members felt that they had performed a public-service in assisting press and radio to provide speedy returns to a news-hungry public. ■

OOPS!

In the alphabetical listing of ham distributors in our gigantic November issue we left out the following—

Nichols Electronic Laboratories, Inc.
64-09 20th Ave.
Hyattsville, Md.

SB [from page 55]

Mirko one first." This appalling situation seems widespread and many DX stations are determined not to QSL first. Who can blame them?

GI3CWY is on 15 with a bare-foot 20A, and getting fine reports from all over the world. MP4KAC is using a Hallicrafters HT-32 and HT-33. MP4KAM is very active and QSLs 100%.

W4DGW/EL was worked by Charlie F7AF on September 29 while alongside the pier at Monrovia, Liberia on 10 meters. According to the DX Committee ruling, this cannot be counted as a country worked. Sorry Charlie. Same answer to Harry, W2JXH who worked K4DXP/KL7 while the ship was right at the North Pole. Many have claimed credit for ELØA, but only those who contacted W4DGW when he was operating ashore in Monrovia on November 22 and 23 in 1955 can count this country. A list of the 23 stations worked by ELØA is on hand.

Forty SB continues to be active, and some DX openings have been reported to South Africa, and Australia. I cannot write of happenings on eighty if I don't receive information. How Come?

Bill Slater, SVØWA is expected this month in Washington on a long delayed vacation trip home. DL4WH, General Bill Hamlin, who recently went SB is expected on a quick visit from Heidelberg. Bill recently put "shoes" on his exciter and has a big signal in the States.

The recent Hallicrafters Contest has created considerable new interest in SB. Many prospective Sidebanders had an opportunity to operate a SB station at the various Ham Jobbers. Many will also win a new receiver.

Your Editor, along with Don, K2AAA operated aeronautical mobile on SB in W3CO's (Brig. Gen. Gregory) USAF C-47 plane enroute to Florida and return. Many enjoyable contacts were made during the trip.

ZL3PJ, Mick is active on 10, 15 and 20 and has now worked all States. He has 47 confirmed and is waiting for a Vermont card. Mick has 85 countries on SB.

Bruno, HB9FU moved his new bride and transmitter to Zurich and is very pleased with the new location. What a signal! Rudy, HB9OJ is awaiting immigration papers to come to the States.

A very Merry Christmas and a Happy New Year to all.

73, Bob Adams, W3SW

Countries Worked (Two-way SB)

W2JXH	89	K6GMA	82	ZL31A	80
W2KR	88	W2CFT	82	W6DOB	78
DL4SV	88	VE4NI	82	WØqvz	78
G3MY	87	W4INL	82	W3HN	78
ZS6KD	86	W2EWL	82	VK3AEE	78
ZL3PJ	85	K2AAA	81	W9GPI	78
G6LX	84	F7AF	81	HR2WC	75
W3ZP	84	OH2OJ	80	K2GMO	75

the Collins 75A-4



SSB RECEIVER

Designed for best SSB reception without sacrificing top efficiency in CW or AM. Excellent image rejection, precise dial calibration, high stability and ideal selectivity.

SPECIFICATIONS

FREQUENCY BANDS — 160, 80, 40, 20, 15, 11, 10 meters.

SIZE — 10½" high, 17¼" wide, 15½" deep.

WEIGHT — 35 pounds.

RACK MOUNTING — Angle mounting kit available.

NUMBER OF TUBES — 22, including rectifiers.

SENSITIVITY — 1.0 microvolt for 6 db signal-to-noise ratio with 3 kc bandwidth.

AVC CHARACTERISTICS — Audio rise less than 3 db for inputs of 5 to 200,000 uv.

AVC TIME CONSTANTS — Rise Time — .01 second. Release Time — 0.1 second (fast), 1 second (slow).

IMAGE AND IF REJECTION — Image ratio at center of each band 50 db or better. IF rejection at center of each band 70 db or better.

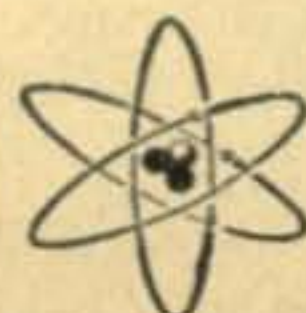
AUDIO CHARACTERISTICS — Output — .75 watts with a 3.0 uv signal, 30% modulated. Output impedance — 500 ohms, 4 ohms. Response of audio circuits — ±3 db 100 cps to 5,000 cps. Distortion — less than 10%.

MUTING — Provisions for muting the Receiver during key-down operation are provided. A muting voltage of +20 volts must be supplied by transmitter.

FREQUENCY STABILITY (at 14 mc) — Temperature — Less than 1200 cycles drift from 0 to ±60° C. Warmup drift — Less than 300 cycles after 15 minute operation. Line voltage coefficient — Less than 100 cycles for ±10% change. Dial Accuracy — 350 cycles after calibration.

Net price, complete with Gear Reduction Tuning Knob, 3.1 kc Mechanical Filter, tubes and instruction book —————\$695.00

*Generous trade-in allowance,
time payment plan.*



Electronic Center Inc.

107 3rd Avenue North, Minneapolis 1, Minn.

For further information, check number 60 on page 124.

December, 1957 • CQ • 113

de W2NSD [from page 110]

to his last day of operating with no results. By this time his voice was getting a little high pitched and his patience was at a particularly low ebb when his "CQ Wyoming" calls were answered by K2's and most of the other 47 already worked states.

Scotty, lying in bed in New Westminster, B.C. listening to his HRO-50T, couldn't stand it any longer. He picked up the phone and called 2000 miles to W7GBY in Powell Wyoming and asked Al's XYL Mary to get him out of the shower and put VP2DA out of his misery. Al raised Bill right away. Bill will probably never stop telling about this. You can imagine how he feels about SWL's now!

Savin' de trees (Southern Expression)

Wayne

WPX No. 1 [from page 29]

Their reply contained the following essential points:

a. "The issuance of international reply-paid post cards is optional with any country. Their acceptance for delivery and return, however, is made obligatory by Section 2 of Article 52 of the Universal Postal Convention — Territories not considered as members of the Universal Postal Union are Mongolia and the Maldives and Laccadive Islands."

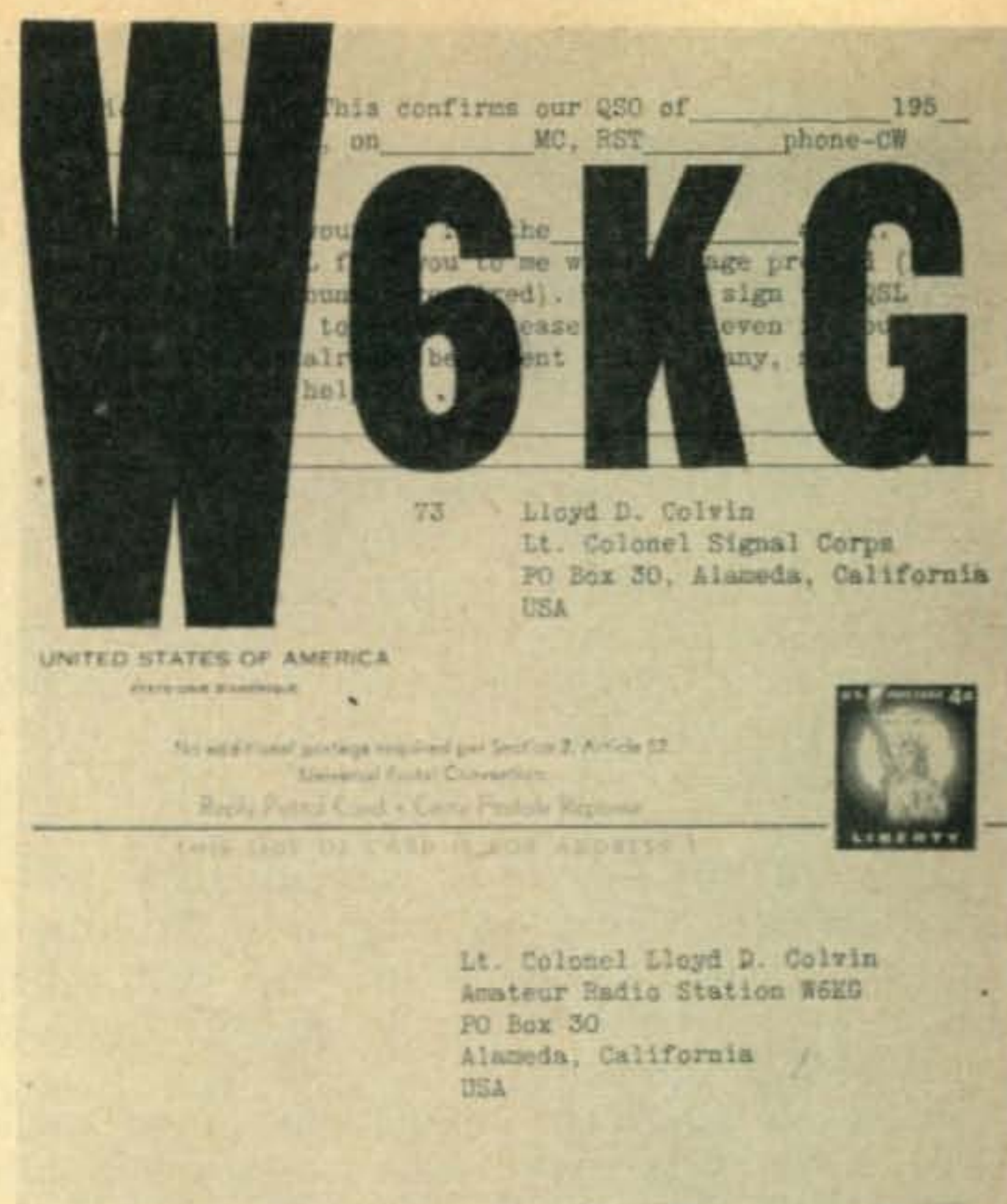
b. "The card is designed to be sent in open mails and neither half may be used as an enclosure."

c. "The prepayment of the reply half by means of postage stamps of the country which issued the card is valid only if both halves of the post card with reply paid have arrived joined together from the country of origin, and if the reply half is sent from the country where it arrived by mail to the said country of origin."

d. "An international reply-paid card may be sent out by airmail by affixing additional postage to the message half to make up the airmail postage at the letter rate to the country of address. In order for the reply half to be returned by airmail it would be necessary for the recipient to affix airmail postage of the country from which the card is being returned."

e. "The headings 'Carte Postale Avec Reponse Payee' and 'Carte Postale Reponse' should be recognized in all postal services. While there would be no objections to your using a rubber-stamp endorsement on the cards, we do not believe that an additional notation would improve matters."

The last statement refers to my suggestion to the Postal Department that some kind of stamp or special printing is required to inform the foreign postal authorities that the cards do



The Return of Postage QSL

not require any additional local postage. As the postal department had no objections, I had stamped (printed) on each reply card the following: "No additional postage required per Section 2, Article 52, Universal Postal Convention". I doubt that many foreign post offices have a copy of this Convention but it sure does help get the replies back. Since I started sending out cards with the above statement my percentage of replies has been 60%. I consider this excellent in view of the fact that these cards have only been sent to hold-out stations who did not answer my regular cards. I found it a wonderful way to obtain QSL's from stations like XF1A and others who do not QSL often.

On the basis of my use of these cards I offer the following recommendations:

a. Print or stamp information on cards to let foreign post office know that no additional postage is required. (This information printed in the language of the country might be a good idea.)

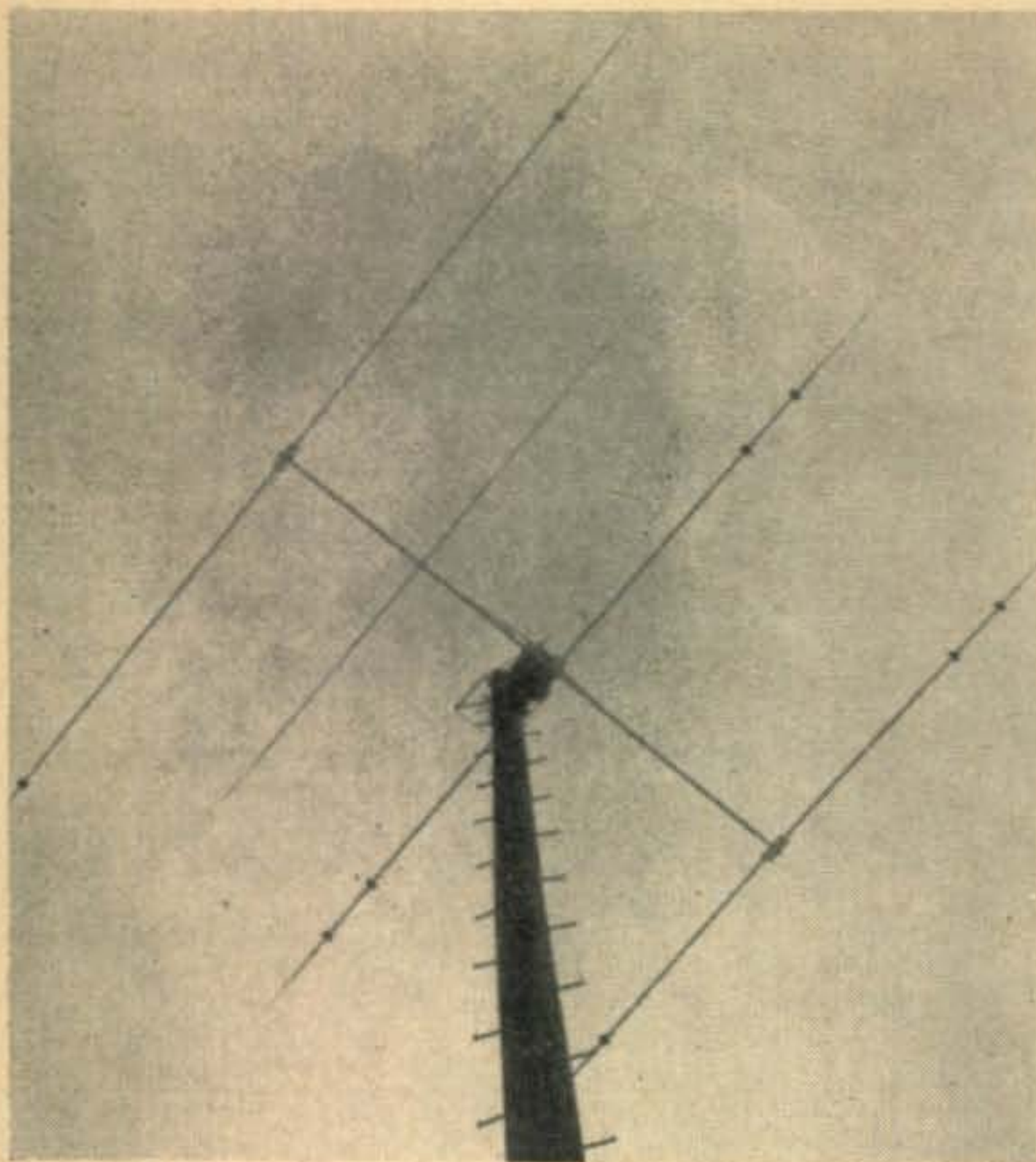
b. If you have any military rank do not include it in the address on your reply card. My failure on this point may account for no reply cards having been received from any country behind the iron curtain—hi!

Between 1 January 1957 and 20 August 1957 I worked stations in 331 different prefixes and received confirmations from 301 different prefixes to win WPX Award No 1 on CW. There are still many more WPX awards to be won, including several "firsts". I wish all of you much luck and hope this article may be of some assistance to you in your WPX endeavors. ■

FIRST "WPX" *won with a* ("Worked All Prefixes" Certificate)

Hy-gain
Communication System !

Winner Lloyd D. Colvin Says:



Operating from W6KG I contacted on CW, radio amateurs in 331 different prefixes located in 141 countries during the first 8 months of 1957 to win the first WPX (Worked all Prefixes) award in the world. My antenna system consists of a Hy-Gain 3 element tri bander. The beam is rotated using a television type rotator, and a Hy-Gain Roto-Brake. The rotator and brake are mounted on top of a 70 foot wooden pole using a Hy-Gain antenna mounting kit.

I have built and used many beam antennas. Considering weight and size limitations, I have never before had a three band, rotary antenna system that compares with my present Hy-Gain three band, single transmission line, antenna.

During DX contests and other operating competitions, fast band switching is a great help. The use of the Hy-Gain 3 band, one transmission line, antenna goes a long way toward accomplishing fast band switching and the working of more stations than the fellow struggling with 3 transmission lines.

Lloyd D. Colvin
Lloyd D. Colvin
Lt. Col. Signal Corps
W6KG

LLOYD D. COLVIN:

Lt. Col. Colvin, pictured to the right with only a few of his nearly 30,000 QSL cards, is now situated at Alameda, California, with his wife, Iris, and daughter, Joy, both of whom are amateurs also. His current rig, in addition to the Hy-Gain equipment, consists of a Johnson-Viking transmitter and a Collins 75A4 receiver. With a good deal of world travel to his credit, Col. Colvin has received over 75 certificates including WAC (19 minutes), WAS (46 hours), Diploma Espana, WAZ (No. 89), DXCC (No. 193), WAP (No. 1 in Asia), DUF 1, 2, 3, 4, WAE 2, 3, WASM 1, 2, WAA, CAA, WBE, WAVE, BERTA, WAJD, KZ-25, CDM, WAV, AJD, H-22, DPF, AAA, OHA, WAYUR, WDT, WGS, and numerous DX and operating awards. He is a member of MARS, AIEF, AFCEA, ARRL, BPL, FEARL, DARL, IRE, ORS, RCC, OTC, QCWA, AI-OPR, ORC, CAA, GAARC, and various Military organizations.

THE HY-GAIN TRIBANDERS:

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December, 1957 • CQ • 115

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JAN) 2.00	811 2.40	5819 23.95
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805 4.00	830B 35	8020 Surp 1.00

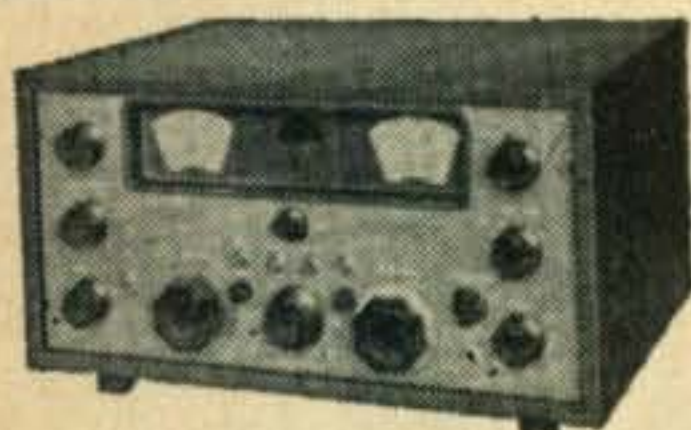
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SPECIAL ADDITIONAL FEATURES

1. Normal and reverse polarity switching
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5. May be used for measuring AC with external meter

Ranges: 0-5000, 10,000, or 20,000 Volts
Sturdy industrial oak carrying case beautifully finished; precision resistors used throughout; statite insulation and best grade bakelite engraved panel.

Instruction sheet attached to lid of case.
Case Dimensions: 18½" x 10½" x 9¾".
Low current consumption (not more than 1 ma. at full scale).
Completely self-contained design.

Accuracy at full scale—+ or -2% for D-C.
Rugged design for use as fixed and portable instrument for field laboratory, or shop use. Built for a lifetime.

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CENTRAL ELECTRONICS 20A, factory wired, \$169; NC-88, \$69. George Stevens, WØATA, 1729 D. Avenue North East, Cedar Rapids, Iowa.

FOR SALE: xmtr T240 final T240 Mod. 200w phone 300 cw, \$65. PE-103, \$5. William Tague, 2168 Mackay Ave., Fort Lee, N.J.

SELL: New N.C. 300 receiver. Never used, still in crate, \$315. John Carlisle, Jr., K4AUR, Route 4, Statesboro, Ga.

FOR SALE: Heath AR3 receiver with cabinet and QF1 Q-multiplier. Both excellent condx, \$40. Need AC1 ant. coupler, good condition. Rodney Schwartz, KNØJML, Box 131, Hedrick, Iowa.

RME-4300, excellent condx, \$145. 2.0 kc mechanical filter for 75A4, F455J20, \$30. Gene Lang, W4FWW, Box 2929, University Station, Gainesville, Fla. Need money for college.

BC-946-B command receiver, 520-1, 500 kcs, modified, power supply, speaker. Hottest BC receiver ever, \$7 FOB. Meissner signal shifter, 40, 80 and MARS coils, complete 10w xmtr or VFO, \$11 FOB. Best offer—100 consecutive CQ's May 1949 through August 1957, perfect except three covers. Miscellaneous QST's, 1928-1941. Charles Felstead, KH6CU, 2440 Kalakaua, Honolulu, Hawaii.

FOR SALE: Cater change a-a v dynamotor 12v to 6v. Output 15 to 45 amps, almost new, \$65. Harvey-Wells kw micro Z. match, \$70. Gonset deluxe clipper-squelcher, new and unused, \$20. Gonset tri-band converter 3 to 30 Mc., \$30. Sherrick antenna coils complete with mount 80-40-20-10, \$15. John Cathie, K2PMD, Alexander, Genesee County, N.Y.

BARGAINS: Late model communicators \$189. Viking Rangers, \$189.95. Viking Valiants, \$349.95. Collins 32VI, \$299.95. Collins 32V2, \$349.95. Sonar SRT-120P with VFO, \$119.95. SX-62, \$219.95. Wilcox CW-3, \$29.95. New RME 4300, \$169. Super-Pro \$129.95. Send for list. We buy for cash, trade used gear on used or new gear. H & H Electronic Supply, 506 Kishwaukee Street, Rockford, Ill.

B&W 5100B/51SB-B like new, \$525; C.E. 10A SSB exciter, rack mounted, coils 10 thru 160 meters \$85; Super-Pro receiver BC-779 \$95; BC-348 neat conversion including xtal phasing built in 85Kc I.F. (selectable) AC external supply \$65; 4000v .5 amp power supply built in floor of Bud cabinet rack with 40" panel space left over, AC & HV (0-4KV) meters \$75; 3500v .5 amp HV supply kit \$40.00, PP 811 linear fully shielded with blower \$25; Parallel 803 grounded grid linear with low capacity fil. trans. fully shielded with blower \$35.00; 300w rack mounted modulator, Thordason xformers \$25; 10/20 meter shielded exciter \$20; speech amplifier/driver PP 6L6 \$20. Send for list. A. Waring, W2CFT, Box 483, Lake Ronkonkoma, N.Y.

NEW SURPLUS—SCR274N Command Set plugs 75c ea. MC211A right-angled gear drive for Command receivers, 75c. SCR522 plugs, \$1.00 ea. BC348 volume control, \$1.95. L. I. RADIO CO., 8309 Lockhead St., Houston 17, Tex.
MULTI-BAND ANTENNA, 80-40-20-15-10. \$19.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Kentucky.

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For further information, check number 63 on page 124.

FOR SALE (Cont'd)

FOR SALE: Complete operating amateur station consisting: one B&W 5100, one B&W 51SB, one Jones Micro-Match, one Johnson Matchbox, one d-104 mike, one Collins 75A4 with 10 and 3Kc filters, speaker, one 2400 hour clock, \$1,150. No trades. Also one HQ100 receiver with clock, xtal BFO (not installed), \$150. Instruction manuals for all. Nothing modified or boogered! Will not crate nor ship! Every item guaranteed in perfect condition. Original cartons for most. Richard B. Diamond, K2DVD, 571 Allenhurst Road, Buffalo 26, N.Y.

FOR SALE: Tubes, brand new Eimas 304TLs \$12; 250th \$15; 813s \$7.50; 832As \$3.50; 811As \$3.50; 203As \$2; 3C-39 \$4.50; filament xformer for 304TLs \$8; for 813s \$5; Gonset 2 meter mobile converter \$25; power xformers 870v-900 mils \$8; 3200 VCT-200 mils \$20; 3500 VCT-230 mils \$20; complete Collins 1200 VCT-280 mils supply, chokes, capacitors, filament and bias xformers \$35; ARC-4 2-meter xceiver, complete with tubes and instructions \$38; Hallicrafter S-53 receiver \$40; FM xmitter and receiver 27 to 38.9 mc crystal control \$40; BC-224 receiver 12v version of BC-348 \$45; I-208 FM signal generator \$85; power supply for SCR-522 \$12; AN/PDR-8C geiger counter \$90 or trade; BC-221AC frequency meter, original calibration book \$75. All guaranteed. Can ship COD. Bill Slep, W4FHY, P.O. Box 178, Ellenton, Fla.

FOR SALE: 75A4, practically new condx, presently surplus at our lab, \$525 FOB Asbury Park. Also 83 ft. commercial Aermotor Tower, cost \$1200, sale \$550 FOB Asbury Park. TELREX LABS, Absury Park, N.J. or M. D. Ercoleline, W2BDS, RD #1 Asbury Park, N.J.

SELL: 12 new plate modulators from 15-35w with speech and tubes, \$15-20 ea. 7 new AT-I modulators \$8 ea. New Supplies: 600v/250ma-12v, \$12. 720v/250ma, \$13. 750v/250ma-6.3v, \$15. 600v/250ma-300v/100ma-6.3v, \$18. Revere model T500 tape recorder, top condition, \$65. New novice 40w transmitter complete, \$20. New Eico model 532 TV bar generator, \$7. All band field strength meter, \$12. 2 amp. tungar charger, \$8. New transformers: 1000-0-1000v/250ma, \$12. 900-0-900v/250ma, \$10. 840-0-840v/150ma, \$7. New 813, with socket and 10v filament transformer, all \$15. 1000 ft. of new RG-58U coax in 100 foot rolls, \$4.50 per roll. RCA 45 RPM phono turntable with 3 tube amplifier, \$10. Maico hearing aid, \$8. 7 new 10w amplifiers for all inputs, less speakers and mikes, \$15 ea. '50 Buick radio, \$8. Shipping charges extra. Stanley Zuchora, W8QKU, 2748 Meade St., Detroit 12, Mich.

FOR SALE: HQ-129-X with 100kc std., book, speaker, excellent condx \$150; VHF-152-A, \$45.-Heath Q-Multiplier \$9. FOB Peter Rosenbaum, K0CXS, 2962 S. Vrain St., Denver 19, Colo. No CODs.

BARGAINS: Reconditioned, guaranteed, shipped on approval. Hallicrafters S22R \$39; SX25 \$69; S85 \$89; S76 \$109; SX99 \$119; SX71 \$149; SX62 \$179; SX96 \$189; SX100 \$229; SX101 \$319; HT32 \$549; National NC88 \$79; NC98 \$119; HRO7 \$159; NC183D \$295; NC300 \$319; Hammarlund HQ100, HQ110, HQ129X, HQ140X, HQ150; Elmac PMR7, PMR6, AF67, A54H; Gonset G66B, G77; Command converters, communicators; Johnson Rangers; Viking II's; Valiants; Harvey-Wells TBS50D, T90, R9A; Collins 75A2, 75A4, 32V3; Morrow; RME; Central; Heath and many others. Easy terms. Write for free price list. HENRY RADIO, Butler, Mo.

FOR SALE: HRO-60, speaker, set of coils and 6-meter coil first \$350 takes it. Viking Ranger, factory wired, first \$200. 6N2, new, first \$115; CE-A slicer with IF amplifier, \$40; Match Box, first \$40; home brew SSB phasing exciter with vox control VFO and power supply similar to 10A, first \$50. All FOB Frank Tefft, W8LTZ, 325 Gratiot Ave., Alma, Mich.

FOR SALE: Complete 2 mtr station, less than 4 mos. old Gonset communicator 11B, 12VDC-115VAC with tuning knobs, 4 xtal positions and mobile mounts. Complete with 2 xtals, schematic, manual, AC&DC plugs, Col. whip and original carton. Plus Master mobile coaxial antenna with extension and Master mobile bumper mount and coax. Worked 7 states with this rig. Net when new-more than \$270. Best offer over \$200 takes all. Mark Herrmann, KN2ZEK, 2707 Creston Ave., Bronx 68, N. Y. FO 5-3185

FOR SALE: 2400v, 700ma transformer (no CT) \$30; Radio Receptor Co., .75 KVA transformer \$25, PE-103, \$25; Lysco 6v vibrator supply, \$10; Master mobile center loaded antenna and heavy duty base, \$13; three element 10 meter beam, \$15; 14" Bud cabinet, \$14; 9" cabinet, \$9. FOB Athens. Jim Grant, W4UVU, Athens, Tenn.

FOR SALE: Hallicrafters SX-28 receiver, \$100; model 401-A Strip printer, \$15. Wanted model 26. Erick Schumacher, K2QVH, 20 Highwater Ave., Massapequa, N.Y.

BARRY'S HOLIDAY SPECIALS

- Eldico High-Pass Filter @ 75¢ ea.—6/\$4.00.
- Glas-Line Non-Metallic Guy-Line @ \$2.89/C'.
- BC-457A (4-5.3 Mcs.) Xmtr. New/like new @ \$4.95.
- BC-458A (5.3-7 Mcs.) Xmtr. New/like new @ \$4.95.
- MD-7 Modulator (w/dyn.) uses 4 tubes—PP1625's @ \$9.95 ea.
- BC-456 Modulator (w/dyn.) @ \$4.95 ea.
- Xmfr-Prim: 115 VAC/60 cy.—Sec: 28 V @ 10 amps. @ \$4.50 ea.
- Sub-Min. Multi-Matching Xfmr—22K CT to 5200 ohms CT and/or 600 ohms CT. Used as phasing xfmr in SSB phone-patch or low level use. Size 1 1/2"x7/8" sq. Herm. sealed (response: 250 to 2500 CPS) @ \$1.35 ea.
- Collins Filter Choke—6 Hy. @ 400 Ma.—70 ohms DC 10KV. ins.—8"x5 1/2"x6". New @ \$8.50 ea. (3 for \$21.00).
- SSB Low Capacity Fil. Xfmr. Prim: 110 VAC @ 60 cy. Sec: 10 V AC @ 10 amps. or 5VCT @ 20 amps. @ \$13.95 ea.
- Prop-Pitch Motor, med. size (approx. 50 lbs. uncrated) for Beams, etc. abt 1 RPM. Brand new and/or like new condition. Shipping wt. approx. 100 lbs. @ \$25.00 F.O.B. Atlanta, Ga., \$28.00 F.O.B. New York, N. Y.
- GE RF Ammeter. 0 to 4 amps RF. 2" round @ \$3.95.
- Plate Xfmr. Prim: 115/60 cy. Sec: 1100 VCT @ 220 Ma. 4 1/2"x4"x4" Grey finish, upright mt. Eldico TR2. @ \$4.95 ea. 3 for \$10.00.
- NC Power Xfmr. Brand new, exact replacement for NC-240 National Recvrs. Also used in NC-100, 101-X, etc. @ \$5.95 ea. 2 for \$10.00.
- Walnut instrument case. Brand new. 10"Hx8"Wx5"D. Used for instruments, etc. w/handle—Real beauty @ \$3.95 ea. 3 for \$9.00.
- Precision Variable Capacitor—double-spaced, heavy brass end plates—ceramic insul., 15 Mmf. to 115 Mmf., straight line freq., 4 1/4"x3 1/2"x3". Ideal for VFO, etc. @ \$3.95 ea. 2 for \$6.00.
- Westinghouse Choke, 10 Hy. @ 200 Ma. @ \$1.95 ea.
- Cabinet w/hinge top. 8"Hx10"Wx8"D. Orig. used for Eldico 500 Watt antenna tuner. Grey finish, New. @ \$2.95 ea. 2 for \$5.00.
- Cabinet w/hinge top. Grey crackle finish. 8"Hx14"Wx8"D. New. Excellent for mobile rig, amplifier. Enclosed cab. \$3.50. 2 for \$6.00.
- Heavy Duty Ohmite switch. Ceramic insul., single pole, 6 position, w/knob & panel mounting bracket. @ \$1.00 ea.
- 6 Foot Line Cords. Extra-heavy zip cord w/plug—5/\$1.00.

FTR Miniature Choke—2 Hys. @ 130 Ma. 2 3/4" high, 1 1/2" wide, 1" deep. Herm. sealed Brand new. Price 40¢ each (10 for \$3.00, 100 for \$25.00). Large quantity in stock.

GEIGER COUNTERS—RCA . . . Brand new, jobber boxed close out prices—write for price—6 different models.

RCA PLATE TRANSFORMER

Pri: 115 V.-60 Cy., Tapped at 105V. Secondary 1100 volts CT @ 250 Ma. 63 V. at 5 Amps., 5 volts @ 3 Amps. (125 volt bias winding). Ideal for low-power transmitters, power amplifiers, etc. Fully cased. Brand new in original cartons. A steal at \$6.95 each (2 for \$11.00).

POWER SUPPLY KIT . . . Containing the transformer described above plus two 10 MFD. 600 V. oil condensers and one 10 Hy. 200 Ma. filter choke. All brand new. . . . Price \$9.95 per kit.

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FILTER CHOKES . . . first is open frame, others potted
 15 hy/ mls; 400 ohms; 2500 v test . . . 4 lbs . . . \$1.19 . . . 2/\$1.95
 10 hy/50 mls; 127 ohms; 2000 v test . . . 5 lbs 95 . . . 2/\$1.69
 10 hy/150 mls; 160 or 210 ohms; HS . . . 5 lbs . . . \$1.69 . . . 2/\$2.95

TRANSFORMERS . . . these have 115 volt, 60 cycle primaries
 1000 v/30 mls; 6.3 v/0.5 a; HS . . . 7 lbs . . . \$1.69 . . . 2/\$2.95
 2300 v/4 mls; 2.5 v/2 a; 5.5 KV ins; HS . . . 8 lbs . . . \$1.69
 2340 v/3.5 mls; 2 x 2.5 v/1.75 a; 6.5 KV . . . 6 lbs . . . \$1.95
 6.3 vct/1 amp; HV ins; Thordarson T48850 . . . 3 lbs . . . \$1.45
 120 v/10 mls; 120 v/10 mls; both et; HS . . . 1 lb . . . 3/\$2.45

MORE TRANSFORMERS . . . these have 230 v., 60 cy. primaries
 1160 vct/710 mls; open frame; 4 KV ins . . . 60 lbs . . . \$17.45
 7 to 13 vct/ 20 amps; potted; 2.5 KV test . . . 25 lbs . . . \$ 2.95

AUDIO INDUCTORS . . . dual section reactors; 235 mph/1.5 mls; 285 mh/0 mls; 28 KC; 0.67 mw . . . each section completely shielded and hermetically sealed; solder lugs on base . . . for dynamic noise suppression use . . . 4 oz . . . 39¢ . . . 3/95¢

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See Page 94, Sept. 1957 CQ

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FOR SALE (Cont'd)

STILL TIME to order your KWickPatch for Christmas. AM models, \$14.95. Sideband models, \$24.95. KWickPatch, Box 612, Redwood City, Calif.

INSTALLED MOBILE in excellent 1954 Chevrolet: Viking transmitter, VFO, Elmac PRM 6A receiver, Q-multiplier, Bassett allband VC-1075 coil with whip. \$1000 or swap. All replies answered. Henry Bivins, 1220 Judson Ave., Evanston, Ill. DAVIS 8-7018.

BOY SCOUT TROOP needs a code tape machine and tapes, receiver, xmitter and misc. What can you spare for an active group? Full use guaranteed and appreciated by Troop 100, Queens, N. Y. Scoutmaster Simon S. Spielman, K2QZU, 834 Far Rockaway Blvd., Far Rockaway 91, N.Y.

LINK 2210-ED-2 mobile unit (complete). 150 Mc. band, \$75. J. F. Coleman, 1433 Tunnel Mill Road, Charlestown, Ind.

COLOR TV converter, Col-R-Tel. converts any black and white TV to receive full color. Works perfect, \$60. Gonset 3-30Mc Conv., \$20. Gonset 28Mc Conv., \$15. N. Dawson, W9MZR, 9715 S. Harding, Evergreen Park, Ill.

VIKING II and matching VFO. Perfect condition, \$240. Lysco clamp tube modulator, \$8. Larry Bauer, W8GWJ, 514 W. Harden St., Findlay, Ohio

SELL Eldico SSB-100-A, 100w xmitter-exciter, prime operating condx, original carton, worked 30 countries SSB, best offer over \$400. J. N. Pomeranz, K4AU, P. O. Box 205, Sanford, N.C.

FOR SALE: RCA TV Eye Camera complete with tripod, excellent condx, like new, \$375. Also RCA surplus TV camera as pictured page 114, August CQ, including tripod, power supply, monitor, etc., \$295. T.V. Labs, 111 Main St., Waterville, N.Y.

A FEW hard-to-find: Hallicrafter's HT17 xmitter coils. 3.5 mc tank, \$100. 14, 21, 28 mc doubler and final tanks, \$2 per band, pp. Jerry Tannenbaum, W9JJN, 5240 Harper, Chicago 15, Ill.

COLLINS F455J 3.1 KC mechanical filter. Brand new, unused, \$28. Cost \$45. Lt. M. J. Stansell, P.O. Box 59, Gunter AFB, Ala.

JOHNSON VIKING II xmitter, UF or Match Box. Excellent condx. Will accept best offer. H. Friedman, K2CMX, 49 Belmont Ave., West Babylon, N.Y.

RCA AR88 receiver, \$195. Motorola-Gonset mobile package complete station converted to 12v includes all band xmitter and VFO and super six converter. All mounted in steel frame for easy mounting under dash. Cost me \$300, will sacrifice for \$100. Larry Shender, W9BCW, 77 W. Washington St., Chicago 2, Ill.

BW-5100-B xmitter, BW-515B-B sideband, perfect like new, \$550. NC-300, speaker, calibrator, perfect, \$330. Commercial tower, two beams, rotator, indicator, \$150. Building home, financial strain, must sell. Harold H. Dunn, W4CHO, Box 265, Lanett, Ala.

4 MAGNETRONS RK5J26, new, sealed, \$75 each. UTC S12, new, \$1. Stancil-Hoffman model R5MS communications tape recorder. Enclosed relay racks 82 1/4" used, \$25. ARC3 filter-amplifier, 14v, \$5. USCG xmitters TSC116A, TX130, TX145, new. Bill Watson, 96-01 133 Ave., Ozone Park, N.Y.

FOR SALE: Electron Corp. model #1001 TV camera. Won ham day at State Fair of Texas. \$495 value, first offer for \$295. George S. Wade, W5ONQ, 1413 Randolph, Garland, Tex.

SX-71 Hallincrafters with matching speaker, never used in factory carton, \$199; S-40B, spotless, perfect, \$75; Commercial Trades Institute built-up kits, VTVM, Bar generator, frequency generator, all three, \$16; PE-104 vibrator supply; Remington portable typewriter, priced FOB. Might trade. R. Lackner, W9WFT, 2029 Bradley Place, Chicago 18, Ill.

PERSONAL HAM SUPPLIES! Pocket printer—name call, address (ink pad included)—\$1.00. 500 miniature labels—name, call, address—\$1.00. Lucite desk wedge, name or call, gold or black—\$2.75. All postpaid. Santer, 544 East 6th St., New York 9, N.Y.

ATTENTION MOBILEERS!! Leece Neville 6 volt 100 amp. system alternator, regulator and rectifier, \$45.00. Also Leece Neville 12 volt 100 amp. system, alternator, regulator & rectifier \$85.00. Perfect condition. Herbert A. Zimmerman, Jr., 115 Willow St., Brooklyn 1, N. Y. K2PAT, ULster 2-3472.

MICHIGAN HAMS! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 327 E. Hoover, Ann Arbor, Michigan. Telephone NOrmandy 8-8696, NOrmandy 8-8262.

BARGAINS IN QUALITY trade-in equipment: Viking, Collins, Gonset, Central Electronics, Hammarlund and others. Every item we handle is in good or like-new condition. Write us for your best deal on new E. F. Johnson equipment, the new communicator III, GPR-90, etc. **LADD ELECTRONICS**, 111 North 41st, Omaha, Nebr.

ATTENTION COMMUNICATOR OWNERS: Illuminated "S" meters that just plug in to attach. No disassembly of communicator required. Also new and used communicators, linear amplifiers, VFO's and all types of mobile gear. **Graham Company**, W1KTJ, P.O. Box 23, Stoneham, Mass.

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PE-103 Owners: 8 pin, Cannon plug made or the PE-103. Brand new, \$1.50 ppd. **Horowitz**, W2CRJ, 216 17th Ave., Paterson, N.J.

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LOW COST VFO from standard radio parts, 80 thru 10 meters with output to drive 150w final direct. For schematic, parts list and dope sheets send \$2.50 to: **Henry J. Moeller**, W7MEO, Box 347, Morenci, Ariz.

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FAMOUS VHF "Lunenburg" antennas, 6 meter 5 element, \$14.95; 2 meter 6 element \$6.95. 6 meter horizontally polarized mobile antenna. **Wholesale Supply Co.**, Lunenburg 1, Mass.

BARGAINS WITH NEW GUARANTEE: HQ-100C \$145; HT-20 xmtr \$249; Collins 32V3 \$495; SX-100 \$229; TBS-50C \$69; TBS-50D \$69; APS-50 p.s. \$29.50; TBS VFO \$35; Lysco 382 VFO \$19.95; Lysco 600 \$69; Eldico TR-75TV \$25; B&W 5100 \$299; Adventurer \$34.50; Knight CW xmtr. \$34.50; Gonset #3024 VFO \$45; Sonar SRT-120P \$129; Globe Trotter \$29.50; Globe King 500A \$495; Globe King 275 \$199; Globe King 400B \$275; Scout 65A \$69; Scout 65B \$75; Globe King 400C TVied \$299; Globe King 500B \$599. Free trial, terms, write **Leo**, WØGFQ, for best deals. **WORLD RADIO LABORATORIES**, 3415 West Broadway, Council Bluffs, Iowa.

QSL's

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QUALITY QSL's. Samples, 10c **Lee**, W5CZA, Box 7171, Oklahoma City, Oklahoma.

QSL's—"Brownie" W3CJI, 3110 Lehigh, Allentown, Pa. Samples, 10c with catalogue, 25c.

QSL SAMPLES. Dime, refundable. **Roy Gale**, Waterford, Conn.

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2C51 2.70	6BA6 .59	50L6 .69	991 6/\$1
2D21 .68	6BA7 1.00	HK54 3.70	1619 6/\$1
2E22 1.85	6BE6 .59	T55 6.95	1625 5/1.00
2E24 2.20	6BG6 1.50	RK20 5.00	1626 10/1.00
2E25 7.00	6BK7 1.00	RK38 4.00	1629 10/1.00
2E26 2.90	6B07 1.00	RK47 3.00	1851 1.70
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TYPE TPF51 RCA H'Sealed Pwr&Fil Transf 1200 VCT @ 200 ma. 6.4V@8A, 5V@3A & 125V@200 ma, 5H7L6"W HiLo Pri. \$6.95 ea., 2 for \$12, 5 for \$25
 TP501 Pwr 24V @ 8A Tap @ 6.3 V wgt 5 lbs. \$5, 2 for \$9
 TP502/5500 VCT @ 650 ma/WST/USN \$39
 TPF52/778VCT @ 200ma/5V @ 3A, 6.3 VCT @ 5A \$4 @, 3 for \$11, 25 for \$70
 TPF53/540 VCT @ 50 ma/6.3V @ 2A, \$2 @, 4/\$7
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 TPF55/4.5KV @ 10 ma/650VCT @ 275ma/6.4V @ 10A & 5V @ 3A/2.5V @ 3A \$7@, 2 for \$12
 TPF57/2500 @ 10ma/2.5V @ 2A, \$4 @, 3 for \$10
 TPF58/5350, 5400, 5000VCT @ 40ma, \$8 @
 TF05/7.5VCT/12A/15KV KENYON, \$7.50 @
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 TFM10/6.3V/1.2A\$2; \$5 TFM11/5VCT @ 3A/6.3VAC @ 5A, \$5 @, 2 for \$9
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For further information, check number 65 on page 124.

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For further information, check number 66 on page 124.

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Murray

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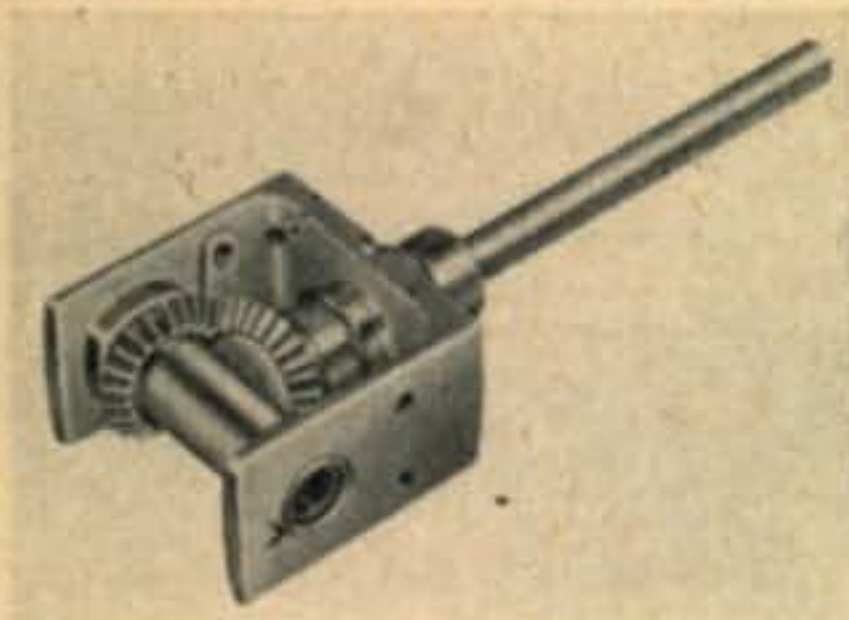
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Patronize Ham Industry, bub.

NEW PRODUCTS



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Johnson 40 Watter

E. F. Johnson Co. has come up with a new 40 watt all band CW transmitter-exciter, complete with vfo and its own power supply built in. In kit form it will sell for \$149.50, wired for \$199.50. Lineup is a 6AU6, vfo, 6CL6 Xtal osc/buffer multiplier, and a 6146 final amplifier. Keying is achieved by means of a 12AU7 Time Sequence Keyer. More info on this? Why sure, just circle I on page 124 and it'll be on the way.



New Mobile Receiver

The Pierson KE-93 receiver, designed for either mobile or fixed use, used 12 tubes and covers 10-15-20-40-80-160 meters and the broadcast band. It features a new noise-suppression circuit, squelch circuit, stability for SSB, 3 kc selectivity, and is 6" wide, 5" high and 9" deep. Full info and prices will be sent if you circle N on page 124.

New Simpson V-O-M

The old standby Simpson Volt Ohm Meter has been improved by the addition of a polarity switch so you don't have to change the leads when the meter goes backwards, spread out scales for even easier reading, and a printed circuit for ruggedness. The ac sensitivity has been increased to 5000 ohms per volt. Some 750,000 of these V-O-M's have been purchased since the Simpson 260 was first brought out in 1937. The price is still \$43.95. More info? See your local distributor or circle M on page 124 and CQ'll get it to you.

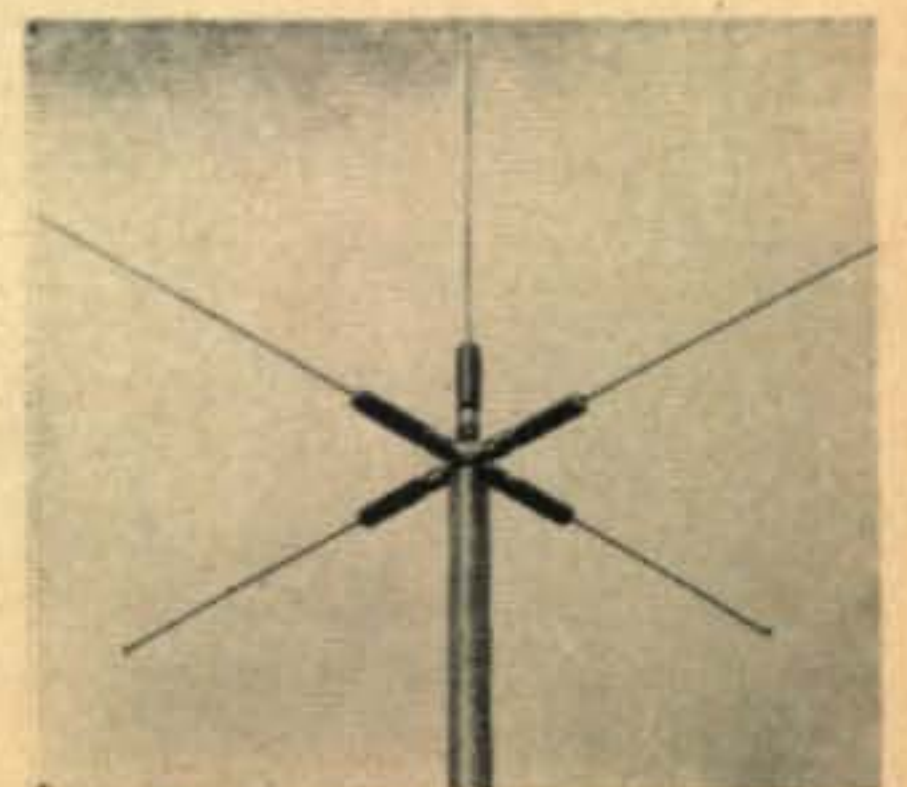


Centralab

Say, these folks have something FREE for you. It's a twelve page Packaged Electronic Circuit Guide containing schematics and specifications on all 96 types of Centralab's printed circuits. It lists all of these circuits which are used by radio and TV manufacturers or can be replaced by these units. There is also a section on testing the units. The booklet may be had from any Centralab distributor or by circling P on page 124.

Midget 10 to 6 Meter Ground Plane

Tele-Beam Industries has a vertically polarized ground plane antenna available in which the radiating element and the four ground plane members are all base loaded, with each element being about 18" long. That's two meter size for six and ten meter operation. They figure it for base station operation, but it should be fine for mobile. No prices. Circle T on page 124 for full info.



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For further information, check number 68 on page 124.

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Check your rig properly with a non-radiating dummy load
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Parallel 2 for 300 ohms @ 236 w. 8 for 75 ohms @ 944 w.
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WANTED: Used receivers and transmitters. Will pay
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WANTED: All types receivers, transmitters, test equip-
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1, Mass. Phone Richmond 2-0048. Store: 60 Spring St.,
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BUY, SELL, SWAP—Test or Ham equipment. State
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pleton St., Jacksonville, Florida.

RADIO MAGAZINES. Buy, sell, trade. Bob Farmer,
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SWAP: One 4X150G, two 4E27's, two 811's, four 807's,
one Navy xmtr GF-11 w/o power supply. Want low
power phone xmtr or what have you. Write John M.
Santoro, K2KLW, 48 Highland Ave., Jersey City 6, N.J.

SWAP: Colordaptor kit, all plans, coils, delay line crystal,
and color material for 36" wheel. Need rec. S53 RME
10-C-2 or ?. Ken Crittenden, W9TUV, 1312 Copeland,
Beloit, Wis.

HAVE COLLINS 32V2. Will sell. Good condition. Prefer
to trade for good receiver of approx. same value. Edward
Green, W5BLZ, Route #2 Box 480J, Dallas, Tex.

EIMAC 4-65A, won at hamfest, never used, \$15 or trade
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Burlingame, Calif.

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JESUS SAVES—"Believe in the Lord Jesus Christ and
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"ham" missionary project. Details write "Hams for
Christ", P.O. Box 218, Holland, Mich.

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the pioneer group. Write Earl E. Cline, Sr., W4PPZ,
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RECEIVER-TRANSMITTER

WIDOW

Every model wired for
6 and 12 volts.

Small size and low cost because you use your present car radio speaker and your own 250-300 V., 180-200 ma power supply. Hangs under your dash. Only 5" high, 6" deep, 9" wide. The Black Widow is a very hot 15-tube set with **separate** supersensitive, super-selective superhet receiver built into the same case with the transmitter which puts 8 W into the air.

RECEIVER: Low-noise cascode RF stage and double-conversion (6 mc and 1500 KC) IF's. Oscillator stabilized by VR tube and balanced-coefficient matched capacitors. Very-high-Q IF's. 5687 output. Has AGC, very effective noise limiter, and an S-meter. Easy Vernier tuning.

Here you have a completely built and tested master-engineered set. Engineers analyzed, improved and miniaturized the best of the 1957 sets and added 1958 improvements gained through their personal experience in current military design.

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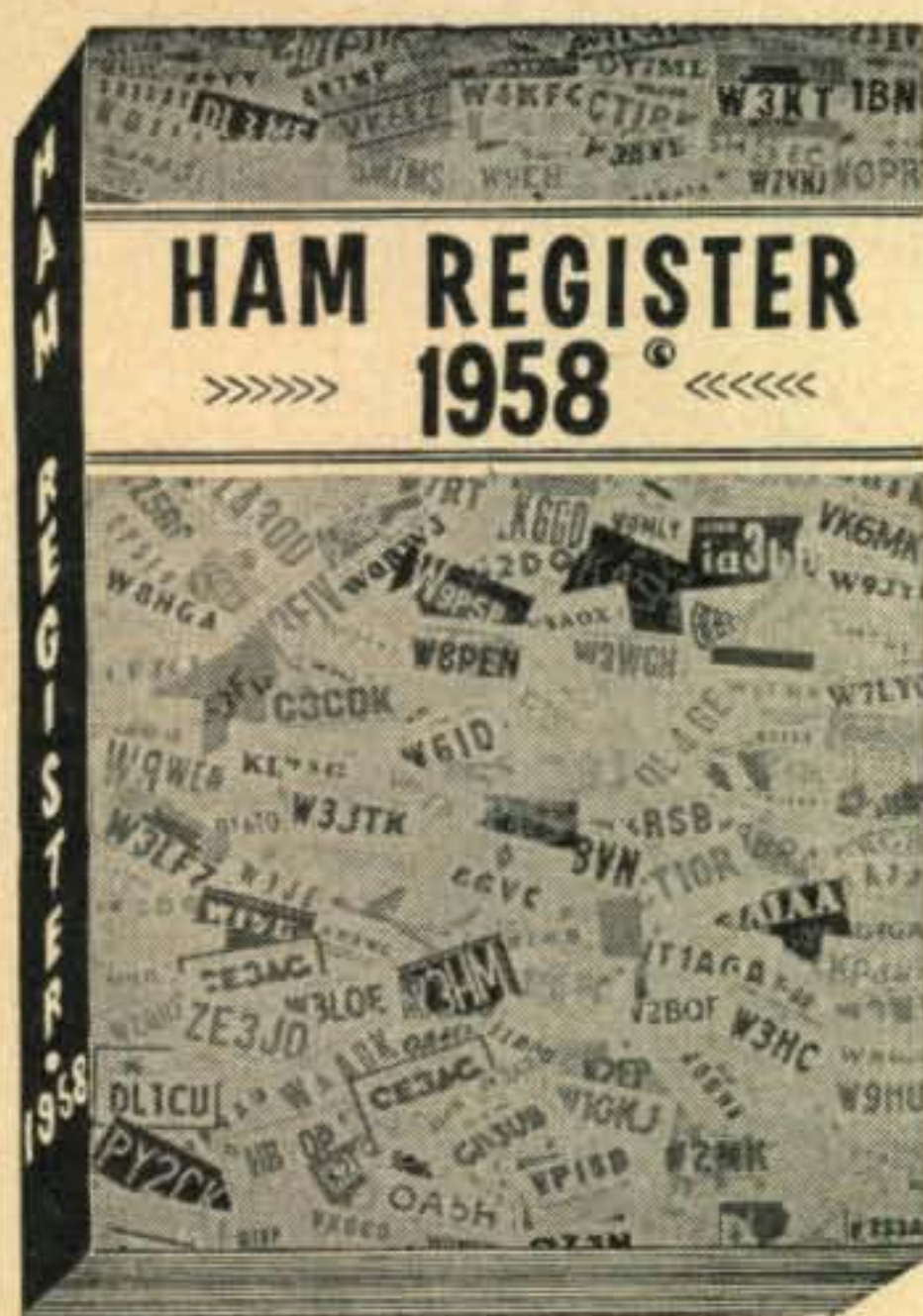
Central Mailing Address & Sales-Showroom:

2534 S. MICHIGAN AVE., Dept. CQ, CHICAGO 16, ILL.

California Distributors' Stores:

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For further information, check number 69 on page 124.



512 pages — 1000 uses. Order today. Price \$5.00 (US).

WITH THIS INFORMATION TO GO ON YOUR QSO'S WILL BE BETTER

W6PHS Chuck

Charles O Bey, 1530 47th Ave San Francisco 22 . . . Age 42 . . . In radio work 25 years . . . Electronics Research Tech — for Eitel-McCullough Inc — Dev on Ceramic receiving & xmitting tubes . . . Clubs: SFRC (Pres) Old Timers Motorcycle Club, S F., No Calif Amateur Teletype Soc . . . Married 16 years . . . It took me 12 years to interest my wife in a hobby and now that she has taken up Ham Radio (W6QMO) she not only snobs me on CW but has held a job as radio operator for the U S Army in S F for 18 months!! and handles traffic like mad at home! she's BPL many times and has traffic service awards.

W4TIE Marg

Mrs Margaret Haley Pearre, 2977 N Radford Rd Memphis 14, Tenn . . . Typist-Real Estate Office & housewife . . . College: Memphis State . . . Family: OM is W4TIZ, 2 girls, Ellen 9, Linda 7 . . . Hobbies: Sewing, Piano, Church (Presby) . . . Favorite ham experience — working CW with one hand while feeding baby 2 A M bottle with other. Figured as long as I had to lose sleep I might as well profit from it.

W4DJY Doc

Dr C E Ballard, Pickens S C . . . Licensed 1935 W4DJY, 1937 W7FZN . . . Started with spark set in 1917 . . . Physician — Public Health . . . College: S C Medical . . . Clubs: Rotary . . . Family: Wife & 17 yr old daughter . . . Hobbies: Photo, Hunting, Fishing . . . From Montana at 2:00 AM diagnosed and instructed the care of a snow bound fractured elbow in the mountains of West Virginia — 1938.

See your favorite Ham Equipment Supplier or write to Ham Register Inc., 37 S. 6th St., Indiana, Pa. USA.

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CQ Magazine

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71	72								

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YL [from page 109]

to 25. They meet the 2nd Fri. of each month at 10 a.m. in the homes of members. Dues are \$1.00 per year. Officers are: President, W5KEC, Hazel; V.P. W5SPV, Patt; secretary and publicity, K5BNH, Bea; treasurer, K5GRF, Irene; program chairman and CD coordinator, W5SYL, Iva.

WHO of Tarrant County (Ft. Worth) now has a club call—K5LZW (Lottsa Zany Women, they say!). They are constructing a club house and have received a homebrew rig, an oak desk, chairs, and other materials.

The Floridora YLs are now offering a certificate to any licensed amateur who submits proof of radio communications with 10 or more members of the Floridora YLs. All contacts must have been made at a time other than during a regular scheduled net meeting, after April 28, 1957, and from the same QTH or within a radius of 25 miles from it. Confirming QSLs should be sent to W4WPD, Shirley Hill, P.O. Box 11185 Produce Station, Tampa, Fla., with return postage included.

PARKA, the YL club of Alaska, is awarding a certificate upon the following conditions: Awarded to any amateur in the world who successfully completes two-way contact with seven paid-up members of PARKA. Operation on any authorized band, any mode; cross-band operation not valid. Contacts valid from Jan. 1, 1957 forward. Send confirming QSLs to KL7ALZ, Geraldine Nichols, c/o Alaska Railroad, Anchorage, Alaska. Please enclose a stamped, self-addressed envelope for return of cards and certificate.

33, Louisa, W5RZJ

YL Nets

Phone

Freq.	Day	Time(ST)	Net
3980	M	1500 P	W7HHH/Monday YL
3900	T	0830 E	K4CZP/Blue Ridge
3838	T	0900 E	WØKJZ/Pi-Net
3900	W	0830 E	W1TRE/Yankee Lassies
3900	W	0930 E	W8ATB
3915	W	0900 P	W6PJF/Ironing Board
3920	Th	0800 C	K4APF/Southern Belle
3985	Th	0900 E	W4UMM/Georgia YL
7230	M	0900 E	W4BWR/Floridora YLs
7235	M	1000 M	WØTYB/Clothes Line
7215	Th	0900 E	W3UUG/Friendly 40
7235	Th	1000 C	W5WXY/Texas YL Round-up
7250	F	0900 P	W6QGK/Los Angeles LYRC
14,240	Th	1400 E	W9RUJ/Tangle
21,390	F	1430 E	KZ5VR/Cross Country
28,800	M	2000 E	W1RLQ/WRONE
29,640	F	2200 C	W9LDK/Lark Nest
29,000	EoF	(SPARCYLS Club)/Bustle	
29,000	T	1300 E	K6EXQ/Hair Pin
3743	W	1330 E	KN1AAK/R.I. YL
3750	W	1400 C	W9MYC
3610	W	2100 E	W1YPH/East Coast YL

Radio Electric

SERVICE CO. OF PENNA., INC.



features
the
newest
from
Collins

Unmatched performance, accuracy and stability characterize the Collins KWS-1 in SSB, AM or CW operation. Extremely accurate 70E VFO. Pi-L output network. Collins Mechanical Filter.

KWS-1 kilowatt Transmitter,

Net Price\$2,095.00



75A-4
SSB
Receiver

Designed expressly for operation on the 7 HF Amateur bands. Features AVC on SSB and CW, separate detectors for AM and SSB, passband tuning, rejection tuning, Gear Reduction Tuning Knob, superior selectivity and many other time-proven Collins features.

75A-4 Receiver, Net Price\$695.00



KWM-1
SSB
Mobile Transceiver

First mobile transceiver in the Amateur field — 175 watts PEP input, 14-30 mc. Use for mobile or fixed station without modification.

KWM-1 Transceiver, Net Price.....\$820.00

Write or see us about trade-ins
or time payment terms.

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SERVICE CO. OF PENNA., INC.

7TH & ARCH STS. • PHILA. 6, PA.

Phone WALnut 5-5840

Branches in Easton, Allentown and Willow Grove

For further information, check number 71 on page 124.

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Holiday Greetings to all our Ham Friends

the world over...



from the Hams at **ALLIED**

RUDY ACKERMANN W9CCW
 GEORGE BERCOS W9WOV
 LARRY BLOSTEIN W9BUD
 JOEL BOLKER K9CDJ
 TASKER DAY W9QBB
 LOU DEZETTEL W9SFW
 MILT FOJTIK W9DCB
 JOE GIZZI W9HLA
 BOB GUMM W9ECC
 MIKE HEINRICH KN9IJO
 JACK HOFELD W9VVX
 JOE HUFFMAN W9BHD
 BOB KING WØZPD
 NORTON LANG W9ARB
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TONY MARCELLO W9VHS
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 BILL MENEZES W9YSL
 GOODWIN MILLS W9MHB
 DAN MITCHELL W9OFB
 RODGER NORDLUND WØYUX
 TOM PICKERING W9LRA
 JIM RYAN W9HWC
 GORDON SCHUMAN W9MIK
 JIM SOMMERVILLE W9WHF
 CHUCK STONE W9EXQ
 JACK THRELKELD W9PA
 "DOC" TOWLER W9ZJU
 PAUL WALKER KØGKE
 JACK WOLFSON K9GXX

ALAN WOODMAN W9RUV



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For further information, check number 72 on page 124.

FINEST AMATEUR RECEIVER IN ITS PRICE CLASS



NC-109

The accent is on value . . . with features found only in more expensive receivers.

The lowest-priced general coverage receiver available today with exclusive "Microtome" crystal filter, separate product detector for CW and SSB reception. Has big "S" meter. Covers 540 kc to 40 mc in four bands including broadcast band. Voice, CW or SSB. Features smart, new styling.

FEATURES:

Calibrated bandspread for 10, 11, 15, 20, 40 and 80 meter amateur bands. Separate tuning capacitors, knobs, and scales for general coverage and bandspread.

Large 12 inch indirectly-lighted lucite slide rule dial.

Adequate over-all selectivity with eleven miniature tubes including rectifier and voltage regulator.

Has exclusive "microtome" crystal filter providing five degrees of sharp selectivity in addition to normal bandwidth for voice, has sharp phasing notch over 60 db deep for interference rejection. Separate product detector for excellent reception of CW and SSB Signals.

Has "S" meter on front panel for signal strength indication and more accurate tuning.

Accessory socket for external adaptors, and other accessory devices including phono input or crystal calibrator.

Has gang-tuned RF amplifier stage, two IF and two AF stages.

Has separate antenna trimmer and tone control on front panel.

Separate high frequency oscillator tube increases stability. Has ceramic oscillator coil forms and is temperature compensated for exceptional stability.

Separate RF and AF gain controls.

Series type automatic noise limiter.

Conelrad (CD) frequencies clearly marked on dial.

Mode selector switch for ANL, AM, CW, SSB and accessories.

Smartly designed two-tone cabinet.

COVERAGE:

BAND	GENERAL COVERAGE	BANDSPREAD
A	.54-1.6 mc	—
B	1.6-4.7 mc	3.5-4.0 mc (80 meters)
C	4.7-15.0 mc	6.9-7.3 mc (40 meters)
D	14.0-40 mc	14-14.35 mc (20 meters)
		20.4-21.5 mc (15 meters)
		27-30 mc (10/11 meters)

TUNING SYSTEM: Separate general coverage and bandspread tuning capacitors connected in parallel on all bands. Bandspread, used primarily for tuning the amateur bands, can be used as a vernier for general coverage use. Antenna trimmer is on the front panel.

AUDIO SYSTEM: Two-stage audio amplifier with single 6AQ5 output tube provides 1.5 watts at less than 10% distortion. A handsomely styled accessory speaker is available. Output impedance 3.2 ohms. Has phone jack.

DRIFT: .01% or less.

SENSITIVITY: Under 1-2 microvolts (10 db signal/noise ratio).

SELECTIVITY: 6 Positions. Constant Gain.

	NORMAL	SHARP
6 db	5.2 kc	200 cycles
60 db	29.5 kc	10 kc

plus four additional intermediate degrees of sharpness.

CONTROLS: Main tuning; bandspread tuning; antenna trimmer; band selector switch; RF gain control; AC ON/OFF and AF gain control; stand-by switch; mode selector switch for ANL, AM, CW, SSB and ACC; tone control switch; BFO pitch control; selectivity control; phasing control.

TUBE COMPLEMENT:

* RF Amp.	6BA6	AF Output	6AQ5
Freq. Conv.	6BE6	Rectifier	5Y3GT
HF Osc.	6C4	Voltage Regulator	0B2
1st IF Amp.	6BA6	Product detector	6BE6
2nd IF Amp.	6BA6	Det, AVC and ANL	6AL5
1st AF and BFO/S meter amp.	12AT7		

OTHER SPECIFICATIONS:

Antenna Input: 50-300 ohms, balanced or unbalanced.

Size: 16 13/16" Wide x 10" High x 10 7/8" Deep.

Finish: Handsome Two-tone gray wrinkle finish.

Shipping Weight: Approx. 35 lbs.

Optional Accessories: Matching Speaker, XTAL calibrator.

Only \$19.95* down

Up to 20 months to pay at most Receiver Distributors.

*Suggested Price: \$199.95**

**Prices slightly higher west of Rockies and outside U.S.A.

For further information, check number 2 on page 126.

Eight out of 10 U.S. Navy ships use National receivers

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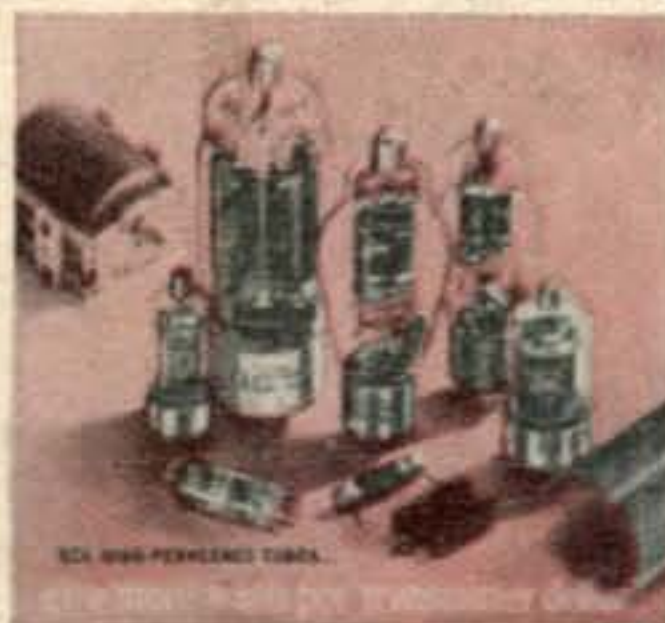


RCA-6146

DESIGNERS' FIRST CHOICE

The RCA-6146 is a new addition to the RCA line of 6146 series tubes. It is a full-wave rectifier tube, designed for use in power supplies for electronic equipment. It has a maximum average current of 1.5 amperes and a maximum average voltage of 250 volts. It is available in both glass and metal packages.

TUBES FOR AMATEURS



RCA 6146 PENTODE TUBE

The RCA 6146 Pentode Tube is a new addition to the RCA line of 6146 series tubes. It is a pentode tube, designed for use in electronic equipment. It has a maximum average current of 1.5 amperes and a maximum average voltage of 250 volts. It is available in both glass and metal packages.

TUBES FOR AMATEURS



500 WATTS INPUT

The RCA 6146 tube is a new addition to the RCA line of 6146 series tubes. It is a full-wave rectifier tube, designed for use in power supplies for electronic equipment. It has a maximum average current of 1.5 amperes and a maximum average voltage of 250 volts. It is available in both glass and metal packages.

TUBES FOR AMATEURS



Leading Amateur Designs ...USE RCA TUBES

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TUBES FOR AMATEURS

**HAPPY HUNTING
and Solid QSO's
in '58.**

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RCA

ELECTRON TUBE DIVISION



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TUBES FOR AMATEURS



NEW VIKING "NAVIGATOR" ...Uses RCA-6146

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TUBES FOR AMATEURS



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